



# EUROPEAN POLICYBRIEF



## URBACHINA POLICY BRIEF 4.2

**POLICY MECHANISMS FOR SUSTAINABILITY:  
EXPLORING SCENARIO AND STORYLINE BUILDING  
TECHNIQUES FOR SUSTAINABLE URBANISATION –  
THE CASE OF CHINA IN 2050**

Olivia Bina, Andrea Ricci, Giovanna Giuffré

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### 1. INTRODUCTION

*[E]ven if information, models, and implementation could be perfect in every way, how far can they guide us, if we know what direction we want to move away from, but not what direction we want to go toward?*  
(Meadows 1994)

*The ultimate goal of foresight is sustainable development in a changing world.*  
(Stoffaës 2001)

*Urbanization has historically served as an essential engine for economic development: No country has reached high-income status without undergoing a successful urbanization process...[Urbanization in China] over the last three decades has been unprecedented in scale: 260 million migrants have moved to cities from rural areas... strains have begun to emerge in the form of rising inequality, environmental degradation, and the quickening depletion of natural resources.*  
(World Bank and DRC 2014: xvii).

Futures studies and scenario planning have gained considerable importance lately in response to uncertainties and risks brought in by globalization, economic, ecological, social and geopolitical crises that threaten the pursuit of progress across world regions. Scenario building, as a long-term planning tool, is particularly appropriate for informing policy-makers and business leaders facing decisions in an increasingly complex and interdependent world.

Two decades ago, in her seminal intervention (International Society for Ecological Economics, 1994) Donella Meadows argued that ‘even if information, models, and implementation could be perfect in every way, how far can they guide us, if we know what direction we want to move away from, but not what direction we want to go toward?’ That sense of direction, when the aim is to move to a sustainable world – as *Stoffaës* (2001) reminds us – continues to be elusive, both within nations and most poignantly at global level (Bina and Ricci 2014). Given what we know today about global change, tipping points and thresholds, which impose both an understanding of planetary challenges and their translation to the urban scale, Meadows’ call for envisioning is all-the-more challenging.

Almost a decade later, these concerns have driven the Global Scenario Group, through the work of Raskin et al (2002) to define a global transition initiative (GTI): *a new sustainability paradigm* that ‘would challenge both the viability and desirability of conventional values, economic structures and social arrangements. It would offer a positive vision of a civilized form of globalization for the whole human family’. They warned that ‘it is all too easy to envision a dismal future of impoverished people, cultures and nature’ and called for a more hopeful, normative, scenario building effort.

In this context of crisis, interdependence and the need for a globally shared vision of sustainable futures, urban development is perhaps the single most striking driving force for change in the 21<sup>st</sup> century. And within this arena, Chinese urbanisation is one of the fastest growing challenges: each year, 10 million people migrate from rural to urban areas, a flow predicted to add up to 350 million new residents in urban areas by 2030, leading to an urban population of 900 million by 2050 (OECD and CDRF 2010); and overall energy demand in China is expected to more than double between 2015 and 2025, with urban demand reaching 85 to 90% of total demand (Bina et al. 2013). Its urbanisation is unequivocally conceived as engine for economic growth (World Bank and DRC 2014), as part of China’s dream is to build a society of common prosperity and a world in which all people live together in peace and harmony (Hu et al. 2014).

In the period 2011-2015, the Chinese government - in partnership with the World Bank and the United Nations, has produced several milestone studies and policy recommendations on its urbanisation process. We note four: 1) a study on the country’s urbanization challenges, jointly produced by the World Bank and the Development Research Center of the State Council (DRC) (World Bank and DRC 2013); 2) a second joint study to address another key development challenge: forging a new model of urbanization that can become more efficient, inclusive, and sustainable (World Bank and DRC 2014); 3) a third study led by the UN Development Programme, examines the sustainable and liveable dimension of Chinese cities, and the notion of Ecological Urbanisation (UNDP 2013); and finally, 4) the “New Urbanization Plan, 2014-2020” approved in March by the State Council of the People’s Republic of China (State Council 2014) represents the very first such plan for China.

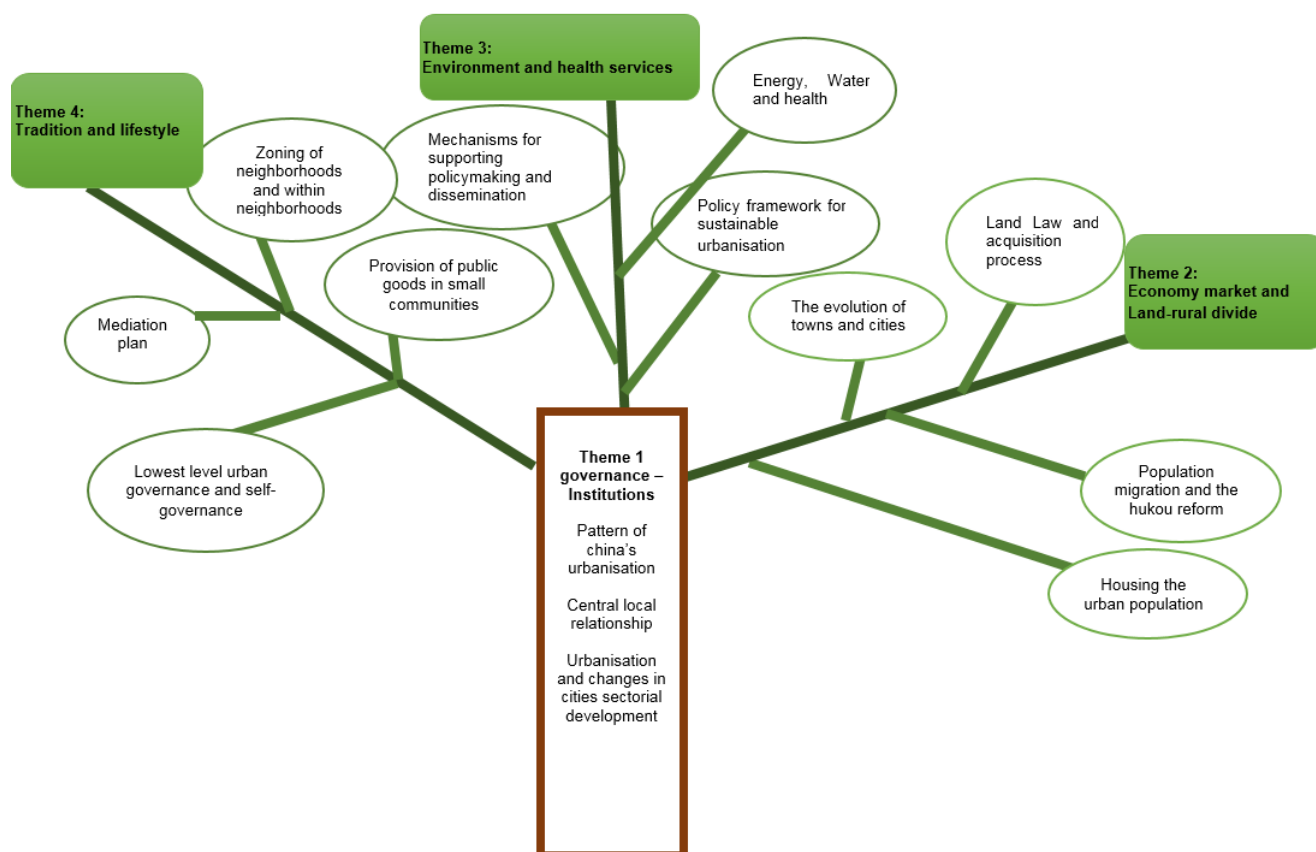
This policy brief is meant as a contribution towards exploring the concepts and methods for the envisioning of sustainable urban futures, and towards shaping the research agenda for this fundamental area of 21<sup>st</sup> century inquiry. It engages specifically with the potential role of scenario building in promoting sustainable urban futures for China, as part of the EU-funded research project on urbanization in China (URBACHINA), and in doing so seeks to contribute to the ongoing discussions and propositions by the Chinese authorities and international organisations mentioned above.

This Brief presents the results of a scenarios and storylines building exercise combining exploratory and normative approaches, and uses the resulting storylines to discuss and reflect on the nature and direction of the current policy discourse around China’s urban future, and on the implications of URBACHINA’s findings for sustainable urban futures. It also presents the results of an international conference organised to engage a wide range of scholars and practitioners from 28 countries on the theme of “Urban Futures Squaring Circles 2050: China, Europe, World” (held in Lisbon, 10-11 October 2014).

URBACHINA addresses the sustainable urbanization challenge from four thematic perspectives, distinct but highly complementary and interacting (as schematically illustrated in the diagram

below): the institutional perspective, dealing with governance issues, the land use and economy perspective, in the broad context of the urban/rural divide, the environmental perspective with the related challenge of resource use and infrastructure policies, and the socio-cultural perspective in the framework of the overall societal dynamics associated to urbanization.

Figure 1: URBACHINA research themes.



While these perspectives have each been explored and discussed in a dedicated workpackage, scenario building provides a privileged venue for their integration. Accordingly, the scenario building process has engaged the entire project team, and the nature and substance of the resulting storylines are inspired by the analysis of trends and resulting challenges uncovered by the four project themes.

## 2. FUTURES, SCENARIOS AND URBANISATION : ISSUES ARISING

Recent academic literature on the use of scenarios to support sustainable development policies is abundant, and 34 studies were selected for review, including 18 scenario studies explicitly focussed on urban futures, and 16 studies that tackle the global dimension of sustainable futures. Of these 34 reviewed studies, 18 relate to China while the remainder focus on Europe and the rest of the world. As summarised in Table 1 below, their comparative overview shows a significant variety in terms of: methods, scope, process, level of participation, themes/critical uncertainties discussed, and wild cards considered.

Table 1 Summary overview of the characteristics of the 34 studies reviewed

		No. of studies out of 34
<b>Approach</b>	Exploratory	21
	Normative	7
	Exploratory and Normative	8
<b>Data</b>	Qualitative	14
	Quantitative	14
	Qualitative and Quantitative	8
<b>Targets</b>	Quantitative targets (normative scenarios)	6
	Qualitative targets (normative scenarios)	1
	No targets (exploratory scenarios)	23
<b>City concept</b>	City	11
	Mega-city	3
	Metropolitan area	1
	City-region	4
	Network of cities	2
	Variable for each scenario	1
	Non-urban specific scenario	14
<b>Time scale</b>	10 Y	8
	20 Y	12
	30 Y	3
	40 Y	9
	40+ Y	2
<b>Main purpose/ target audience</b>	Research/Research community	2
	Policy/Governments & policy makers	22
	Business/Companies	1
	General/Civil society	2
	All sectors (research, policy, business, civil society)	6
<b>Core Objectives</b>	Improving and supporting policy or strategy development	26
	Identifying trends and resulting challenges	13
	Priority setting for long-term agendas	3
	Identifying major areas of innovation	1
	Integrating social, economic, environmental and technological perspectives	1
	Build a collaborative vision	3
	Methodology and capacity building	3
<b>Analytical/participatory</b>	Analytical	19
	Participatory	5
	Both	12

A wide range of wild cards (defined as low probability, high impact events) are considered.

Table 2 Summary overview of the wild cards in the 34 studies reviewed

	Wild cards at macro level
<b>Reforms /Governance</b>	➤ Chinese democratic revolution(Global Europe 2050)
	➤ Civil war in China(Global Europe 2050)
	➤ Retrenchment from globalisation (Global Risks Landscape 2011)
	➤ Rise of strong ecological orientation (Interact project 2007)
<b>Social and demographic</b>	➤ Changing values of future young generations (Global Europe 2050)
	➤ New ruralism (Interact project 2007)

	➤ Killer Virus (iKnoW Policy Alerts 2011)
	➤ Wheat crisis hits humans and animals (iKnoW Policy Alerts 2011)
<b>Environment energy and climate changes</b>	➤ Global dismissing of nuclear power after the accident in Japan (Global Europe 2050)
	➤ Rapid growth of a carbon capture, utilisation and storage (CC(U)S) infrastructure (World Energy Scenarios 2050 World Energy Council)
	➤ A breakthrough in energy storage, including power-to-gas technologies, and a changing paradigm of end use involving smart grids consumer engagement and demand-side management. storage (CC(U)S) infrastructure (World Energy Scenarios 2050 World Energy Council)
	➤ Resources security (Global Risks Landscape 2011)
<b>\Technology prospect</b>	➤ Innovation Boom: Biotech in China (I-Know website Wi WE Bank)
	➤ New techno-economic paradigm from Asia and technological breakthroughs (Global Europe 2050)
	➤ Robots & iCare for the Aged (Global Risks Landscape 2011)
	➤ Cyber security (Global Risks Landscape 2011)
<b>Economic growth</b>	➤ Slowing of Chinese economy (<6%) (Global Risks Landscape 2011)
	➤ Asset price collapse (Global Risks Landscape 2011)
	➤ Extreme commodity price volatility (Global Risks Landscape 2011)
<b>Territorial and mobility dynamics</b>	➤ Infrastructure fragility (Global Risks Landscape 2011)
	➤ Critical information infrastructure breakdown (Global Risks Landscape 2011)

Overall, the review suggests there are three main reasons for engaging in urban futures studies and scenarios:

- (i) the growing complexity of urban systems and the resulting need to extend traditional planning horizons;
- (ii) the intrinsic relationship between strategic planning and futures studies (both deal with long-term development visions);
- (iii) the social debate and stakeholder collaboration inherent to urban planning can be best achieved around holistic visions of the urban future (which scenarization can produce).

The complexity issue translates, among other, in a wide variety of goals that drive urban scenario work.

Table 3. Example of goals from urban focused studies

	<b>Example of goals from 17 urban-focussed studies:</b>
<b>Energy and climate</b>	✓ To develop a cross-sectoral integrated low carbon strategy for a city X
	✓ To predict different levels of carbon emissions
	✓ To give advice on energy-saving buildings
	✓ To explore strategies for developing a low-emission city
<b>Land use and planning</b>	✓ To assess the impacts of urbanization policy on land use change
	✓ To find new solutions for urban mobility
	✓ To achieve integrated regional development
<b>Sustainability Other-general</b>	✓ To devise sustainable paths to city development
	✓ To explore a country's urbanization future
	✓ To guide the urbanization decisions of policymakers
	✓ To generate consensual scenarios for a region
	✓ To provide reference data for future urban planning
	✓ To devise socio-technical scenarios for the retrofit of core city-regions
	✓ To balance the speed of urbanization with the need for quality of life

Few of the sample studies reviewed engage upfront and as a priority, with the need to promote sustainable urban futures. Since sustainable development became a widely acknowledged policy goal in 1992, with the adoption of “Agenda 21” of the United Nations Conference on Environment and Development (UNCED 1992), much has been achieved – and yet, far more remains to be done. Twenty years later, scientists and policy-makers have called for a transition from, and a transformation of, the current development and growth paradigms (Bina 2013), acknowledging

what Raskin and colleagues noted just ten years after UNCED: that the ‘first wave’ of sustainability activity has been ‘insufficient’ and that a ‘new wave must begin to transcend the palliatives and reforms that until now may have muted the symptoms of unsustainability, but cannot cure the disease’ (Raskin et al 2002:x).

Meadows (1994) pointed clearly to the need of a more defined vision of what is desirable. Only once a vision has been determined, can methods and tools be refined to serve its goals and the aspirations that have shaped it. The Global Scenario Group, led by Paul Raskin (Raskin et al 2002), consider envisioning desirable futures as a necessary step to enable the process of global transition towards sustainability: the process of choice - through analysis, imagination and engagement - followed by action. This appeal is further supported exactly two decades since Meadow’s speech, by the recent work of Costanza and co-authors (2014) arguing that ‘creating a shared vision of a sustainable and desirable future is the most critical task facing humanity today’.

Thus, the message - over thirty years since sustainable development became a central concept, and twenty since UNCED raised it to global relevance - is becoming increasingly clear: if societies want a sustainable future (note the title of Rio+20’s UN Resolution: ‘The Future We Want’, (UN 2012)) they must envision such future in bold and detailed terms, allowing imagination back into the process of planning for transformation. Governments’ responses to the latest financial and economic crisis have offered little in the way of alternatives to the current system of market-driven capitalist growth. None will be forthcoming, unless societies make the effort to imagine and envision a different, desirable and sustainable future. And this is especially true for urban futures (‘The City We Need’, (UN Habitat 2014)), and for countries like China, where urbanisation is taking place at unprecedented speed and scales. Indeed, the Chinese government has been exploring what it calls ‘a new model of urbanisation’ (World Bank and DRC 2014). This means that scenario work that would meet the standards and principles advocated by Meadows, Stoffaes, Raskin, and Costanza, requires the development of visions supported by the use of (primarily) normative studies. Yet, of the 17 urban studies reviewed, only two were normative, four combined exploratory with normative elements and the remaining 11 were exploratory only.

Explorative approaches imply a desire to know what the future will be like, so as to adjust to expected change (*pre-act*); normative approaches imply a belief that futures-oriented planning can change development paths (*pro-act*, or acting on the desired outcome). Table 4 summarises the characteristics of each approach found in practice.

Table 4 – Predicting futures and explorative and normative scenarios

Category:	Answers the question:	Main objective:	Methods/techniques:
<b>Predictive exercises</b>	<i>“what will happen”</i>	to clarify how specific drivers will develop	trend extrapolations; business as usual (BAU) scenarios
<b>Explorative scenarios</b>	<i>“what can happen”</i>	to identify drivers (frequently using qualitative data)	forecasting; foresight; strategic scenarios
<b>Normative scenarios</b>	<i>“what should happen”</i>	to assess how a specific target can be reached	normative scenarios; backcasting

Based on: Vergragt and Quist, 2011; and Nowack et al. 2011.

In order to envision desirable and sustainable urban futures it is necessary to ask ‘what do we want’, ‘what do we hope for’, and – with an eye to the ethical dimension of sustainability: ‘what should happen’. The work led by the World Bank, the Chinese Development Reform Commission and the United Nations Development Programme combines exploratory methods with a partly normative dimension. The latter, however, largely appears to support and serve established policy objectives rather than embrace an open ended envisioning approach, one that would not be constrained at the outset by the observation of current trends and their interpretation along the established models and paradigms.



A useful illustration of the fundamental difference in approach between a more narrowly driven forward looking approach (whether explorative and/or normative) and a process of envisioning (urban) futures is found in the distinction, proposed by Raskin and colleagues (2002), between 'proximate levers' and 'ultimate drivers' of change:

- A) Proximate levers – respond to short term intervention:
  - Demographics
  - Economy
  - Technology
  - Institutions.
- B) Ultimate drivers – shape society and the human experience, subject to gradual cultural and political processes, and expand the frontier of the possible by altering the basis for human choice:
  - Values and Needs
  - Knowledge and Understanding
  - Power structure
  - Culture.

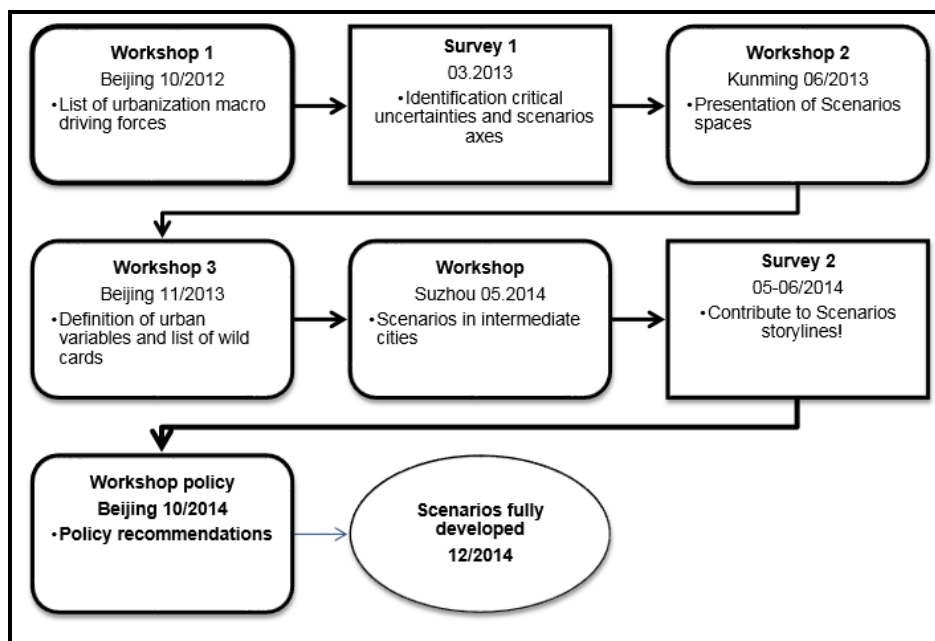
In summary, the wide consensus on the long term unsustainability of the current urban development pathways must lead to questioning the “fundamentals”, which urban scenarios can only achieve if they include an explicit representation of the ultimate drivers and of the impacts that ambitious (and possibly radically new) targets entail on long term development trajectories. This can only be achieved if the scenario building process allows also for the production of a vision into the long term future, and free of any path dependency.

### 3. THE URBACHINA PROCESS AND METHODS

In line with current practice, URBACHINA's scenarios have been developed for the target year “2050”. This time frame is essential to be able to envisage paradigmatic changes in terms of aims and means, and to engage with proximate and ultimate drivers of change.

The approach adopted to build the URBACHINA scenarios is in line with the scenario building methodologies that emphasise the participatory dimension. It relies on the inputs provided by a wide community of experts from all world regions through two surveys and a series of five dedicated workshops (figure 1), over a period of two years. Altogether, contributions have thus been elicited from over 200 between scholars, city administrators and urban planners, policy makers and representatives of civil society. The majority of participants to the workshops were Chinese, while respondents to the surveys originated from China (ca. 30%), Europe (ca. 50%) and other world regions (ca. 20%). Applying such a participatory approach to the specific challenge of sustainable urbanization in China is a new experience.

Figure 2 The URBACHINA participatory scenario building process:



A first step led to the identification of critical uncertainties (drivers of change that are expected to play a major role in shaping the future of Chinese cities, but whose possible evolution is largely unpredictable).

These turned out to be on the one hand *macro drivers* that affect the overall socio-economic framework of China, such as the ageing of population, the increase in the cost of labour, the pace of technological progress and its impact on economic efficiency, and the increasing attention towards the development of human capital, but also drivers that bear a specific relevance in the urban framework, such as the optimisation of land use, the increasing attention towards the urbanization of people (as opposed to the urbanization of land), and policy reforms such as notably that of the *hukou* system.

The survey that followed revealed that drivers that are currently considered of paramount importance for mature economies (and particularly for the EU in a period of crisis), such as the cost of labour, or productivity, are perceived of lesser importance in the current Chinese context, while the nature and extent of reforms in social policies appear to be shrouded in uncertainty.

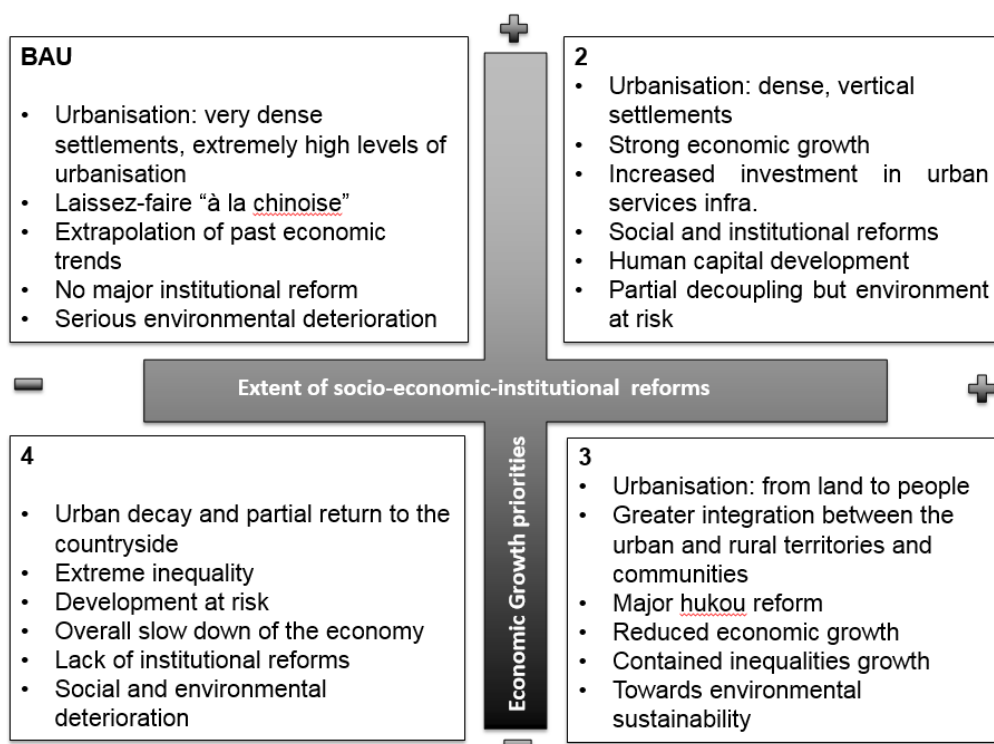
Clustering several of the identified drivers ultimately led to the identification of two main dimensions that were deemed apt to generate the URBACHINA scenario space

- the pace of economic growth, or rather, the extent to which economic growth will remain the prevailing driver of urbanization policies
- the nature, speed and extent of policy reforms, particularly those that aim at reducing inequalities, promoting human capital development and inclusiveness

Four scenarios were thus envisaged (see Figure 3 below).



Figure 3 The URBACHINA scenario space:



On the other hand, it was noted that a future that would encompass no significant reforms lacks a realistic base (quadrants "BAU" and 4 in Figure 3), leading to recommend that the further scenario elaboration be focused on the two right-hand quadrants (2 and 3).

It was therefore ultimately decided to develop two main storylines:

- the "Bamboo" storyline, featuring rapid, unregulated growth, and accelerated pace of production and consumption, constant change (preferred to systemic resilience) associated with the triumph of a global economic dimension
- the "Ginkgo biloba" storyline, pointing to a solid, slow and more structured growth, with strong roots in the contextual socio-economic and ecological environment, and a progressive build-up of systemic resilience, where the regulative dimension prevails as a driver.

URBACHINA does not feature an explicit dimension of quantitative analysis, as its forward looking approach concentrates on the development of scenario narratives (the storylines). From a policymaking perspective this responds to the primary goal of demonstrating the relevance and the value of envisioning one or more possible futures that are not *a priori* constrained by current trends and the associated mainstream beliefs, thus opening to the possibility of paradigm shifts: although progress has been recently made in the analytical representation of socio-economic discontinuities, the modelling of paradigm shifts remains a daunting challenge as models and the mathematical equations therein basically adopt an extrapolation approach.

On the other hand, narrative storylines can be checked against the dynamics of basic indicators that typically illustrate the fundamental characteristics of an evolving socio-economic system. Such "vital signs" have been included in the scenario building process and their quali-quantitative appraisal usefully complements and validates the narrative storylines, as described in the next section (see also Annexes I and II ).

## 4. THE URBACHINA STORYLINES

### The BAMBOO Times

*Bamboo is one of the fastest-growing plants in the world, highly diffused in China as well as across Asia. Flexible, light and yet strong, bamboo is widely used for construction and decoration. In the “Bamboo Times” scenario, we take bamboo as an icon of a rapid, largely unregulated growth, and accelerated pace of production and consumption, and constant change (rather than systemic resilience) driven by China’s triumphant participation in the World Economy.*

#### Governance: competing city regions

Vital signs - Rate of change GOVERNANCE		BAMBOO
Central government	↔	A politics committed to ‘harmonious green’ economic growth through a strong government and an efficient economy integrated in the World Economy. Land and fiscal reforms.
Central government and local/cities government	↔	High level of continuity with past trends. The tax reform empowered cities to raise their own revenues - High competition between regions. Rise of East and Centre. West rises then declines.
Participation the case of community and residents committees (RCs)	↔	Continuation of past trends: participation is carefully managed and limited to ‘volunteers’. RCs struggle to serve their community.
China and the world	↑↑↑	China strives to maintain its role as a superpower in the global market.

#### Central Government

The central government is led by those advocating market-based instruments aimed at promoting ‘a harmonious green growth’, however prioritization of environmental and social values is weak in contrast to economic considerations. The main aim is the promotion of GDP growth (which slows down significantly only after the 2030s), considered a means to continue to raise material wellbeing. Affordable energy and internal consumption combined with international trade are the primary drivers of growth.

#### Central government and local/cities government

Market and fiscal reforms have empowered city governments to raise their own revenues (including through property tax and capital gains in the late 2020s) driving a fierce race-to-the-bottom in regulation. In a highly competitive environment, the city-regions and megalopolises of China’s east and centre have become drivers of innovation, participating fully in the World Economy and generating 85% of national GDP. But parts of the central and north-western regions struggle, and some enter into controlled economic decline. Struggling to balance the growing power of city-regions and megalopolis, the central government planning and policy making continues to take place in cycles of big policy initiatives resulting mainly from improvisation, rather than foresight or testing. Policy implementation continues to be weak, leaving room for creative improvisation, while repeated anti-graft campaigns have failed in their objectives. Ministerial rivalry and empire building sideline weaker ministries. The Party continues to be vital in its coordination function at all levels. Party members join the planning community in repeated efforts to mediate and coordinate ministerial and other actors, including private, corporate stakeholders. The government is constantly balancing regulation and market solutions in an effort to control tensions arising in those districts over decisions that promote growth at the expense of the environment and regions excluded from the benefits of the economic growth.

#### Participation: the case of community (shequ) and Residents’ Committees (RCs) level




Participation continues to be limited to ‘volunteers’ as defined by the Party and elections of the RCs remain largely unrepresentative. RC staff continue to be overworked, underpaid and unable to

meet the ideal of serving the people of their jurisdiction and so lose heart and motivation, leading to problems of governance and even failure to meet key policy targets. Residents' own self-organised activities (singing, dancing, musical bands, gambling) continue to flourish but are constrained in their scope for horizontal linkage (unless endorsed by the Party at higher levels of government).

### China in the world

China enjoys the status of superpower, and, in a globalised and highly interdependent world, wields its economic might with firm diplomacy. The latter is made easier thanks to a large network of Chinese now living abroad (many of whom were driven out by dissatisfaction with large scale control and corruption) and occupying position of influence and prestige across governments and international agencies. The demand of energy security has created tensions in areas such as Xinjiang and increase the scrutiny and invasion of private life in the name of domestic security

### Economy driving force: economic growth

Vital signs - Rate of change <b>ECONOMY</b>		<b>BAMBOO</b>
<b>Economy</b>		Moderate 'harmonious green' growth (market economy). Consumption thrives. Partial privatizations, and partial decoupling of resources consumption from economic growth.
<b>Technology</b>		Significant advances driven by major investments in innovation and technology. Leading role of multinationals.
<b>Hukou – social policies</b>		Use of increasingly sophisticated measures (and technology) to direct the movement of workers, goods and services. Limited social integration; widening of income gap.

### Economic sectors

Innovation has blossomed following the partial privatisation, the development of intellectual property and the patent system laws implementation. Large private sector firms lead the research and innovation and the tertiary industry, especially technology industry, rise in highly specialised city-regions. Competition and unequal distribution of growth are exacerbated by the market preference of the producer services that persistently targets locations in the major cities of the East and Centre. Thus, harmonious green growth characterizes the 20s and 30s. As the rate of growth slows disparities in the distribution of wealth increase, and western regions and parts of the centre are significantly affected.

### Employment, migrants and social services

In a constant balancing act between market and regulatory forces, Central Government introduces increasingly sophisticated measures (and technology) to direct the movement of workers, goods and services, so that it serves the overall aim of growth and stability. However, social integration is far from being achieved and the income inequality widens the gap between citizens. Even if the establishment of a knowledge based industry has diminished the flow of migration from the rural areas, the increase divide among parts of the country continues to fuel migration from the western regions (which witnessed a peak of growth in the 20s, followed by decline in the late 30s). Registration and wellbeing of migrant workers remains a major task of Residents Committees (RCs) who continue to be underfunded. In certain regions municipal budgetary constraints (and the need to remain competitive) result in migrants still receiving different access to schooling and medical facilities compared to those with local, urban-registered hukou.

A divide in the availability of essential services between cities and districts and between regions, especially between the north-west and the east, is the consequence of a partial privatisation of services. The state or province-owned companies still dominate the market, leading to unfair competition, and conflicts of interest between companies and provinces. Housing and health sector example: Developers continue to ignore the planned stipulations for the provision of adequate health facilities thus, many of the affordable housing areas are served by poorer quality clinics and involve longer distances to hospitals. This drives the better-off away, and into better-provided areas, while leaving the remainder in a housing context that is declining or 'sinking' (disreputable).

## Security

The government invests massively to contain the risk of cyber-attacks, data fraud/theft, and critical information and infrastructure breakdown, partly driven by economic disparity and social unrest that rise again after 2040. Unrest grows in cities, especially in areas where there is a rise in segregation of housing types according to different wealth and income-based life styles. Security patrols by personnel hired by Residents Committees (RCs) or Property Management Committees (PMCs) continue to be inadequate and police patrols too infrequent. Theft increases. Migrant workers resident in the same area are blamed (although they are often the victims of theft). Security's accountability is unclear and tensions rise.

## Lifestyle: self-made individual “always on”

Vital signs - Rate of change LIFESTYLE		BAMBOO
Chinese dream	↑↑	Entertainment, material wellbeing.
Demographic	↑↑	Growing population; Significant international migration to compensate for ageing.
Culture	↑↑	Thriving individuals and lifestyles driven by digital creativity.
Knowledge	↑	Digital information and entertainment are pervasive dimensions of life. Top-down cultural pedagogy persists.
Nature	↓	The relationship with Nature is indirect and primarily virtual, or contained in artificial settings.

## The Chinese dream

The Chinese dream and lifestyle reflects significant rise in wellbeing, underpinned by technological advances achieved by the advancement in technological innovation and active participation to the global market production. Social stability remains a priority and relies on a society shaped by constant mass entertainment, rising consumption and social homogenisation.

## Culture individual, family, traditions

The dominant culture is one of ‘always-on’, leading to digital creativity and social vitality that underpins a thriving new economy of products and services for the management of digital lives. Personal capabilities, inter-personal relations and lifestyles are all heavily dependent on technology (i.e. info, cogno, bio, nano), not least given the physical distances affecting everyday family and social lives, especially in the technologically advanced city-regions of the east.

Values, family lives and traditions have been transformed by the spreading of technology, the massive uptake of ‘virtual reality’, including in the tourism sector. Top-down cultural pedagogy continues to be widespread, through increasingly sophisticated and subtle means. It emphasises large temples, markets, and famous sites, at the expense and ultimately disappearance of a sense of local heritage, institutions of historical commemoration and occasions for ritual and festival in villages that urbanized in the 2010s and 2020s.

## Relationship with nature

The relationship with nature has become almost entirely indirect and/or virtual. Just like the bamboo plant, individuals are flexible, strong, and prone to constant change. Clean technology, robots and engineered ecosystems are the market solutions for the delivery of goods and services, and the standard answer to chronic environmental problems (advanced energy systems, engineering of plants and animals and industrialisation of the food chain).

## City planning and life: the megalopolis

Vital signs - Rate of change CITY PLANNING AND LIFE		BAMBOO
City type	↑	Megalopolises, 'Harmonious Garden Cities'. Vertical and horizontal expansion.
Public spaces	↑↑	Technology cities: commercial and efficient use of public spaces.
Social housing and house management	↑	Shortage of affordable housing and deep divides for services availability among city districts, based on residents' wealth.
Ecosystem services	↑↑	Efficiency use of resources and technology mediate a fragile coexistence between economic growth and environment. Technological solutions for energy efficiency, water reuse and air quality control.
Rural-Urban links	↓	Forced integration by land requisitioning and commercial consolidation of arable land.

### City type

Early research for promoting 'eco and low-carbon' cities in the 2010s and 2020s were quietly abandoned as the unstoppable blurring of urban-rural boundaries led to major megacity-regions, heavily dependent on cheap energy and technology to solve environmental problems and severe resource scarcity. The 'Harmonious Garden City' (or megalopolis) has become the main spatial planning model for horizontal and vertical urban expansion, following massive conversion of collectively-owned into state-owned land in the 2020s.

### Public spaces: planning for green efficiency

Mid-level and roof-level secondary public and private space, connected by a network of garden-like bridges to adjacent building and gardens, are common. Vertical 'cleaning towers' capable of changing the local micro-climate and recycling water and air can be seen interspersed throughout the wealthiest city-regions. Green spaces and landscaped spaces and squares, small and large are well used by residents, but large spaces continue to be didactic, often limiting residents in their choice of activities. Market and food stalls continue to be legal only in designated covered markets, and informal and unplanned uses of public spaces by the mobile population of workers and the self-employed are systematically subject to forced removal. By 2050 the small temples of incorporated villages, which are their neighbourhood meeting places and their own heritage have almost all been destroyed.

### Social housing and house management

Housing affordability issues create deep generational divides. Because of continuing shortage of affordable housing, and because Economic and Comfortable Housing (ECH)(affordable) prices have risen, rented and crowded poor-quality old work-unit and urban villages remain common. Development of high-end eco-efficient housing and commercial estates, and conservation of heritage or old-style rebuilding, combines with the relocation of the original residents to good but distant housing. This results in the young and middle-aged to seeking residence and work in the cities, according to their own networks, while the old and the children 'stay behind' in more and more distant locations. Segregation of housing types according to different wealth and income-based life styles continues. Provision of schools, medical and security and other services are further differentiated. Those living in welfare/affordable housing and migrants in provisional housing are excluded and blamed for their lesser quality and culture in cases of crime and pollution or problems of hygiene.

Property management persists as an unresolved problem in most large cities and city-regions, leading to further divide between rich and poor. Property Management Companies (PMCs) in all but the highest end housing estates raise insufficient funds for maintenance (from fees and commercial uses of planned residents' facilities). Funding for maintenance available to Street offices falls short of requirements, having been inadequately planned budgets/financing. This leads



to rapid deterioration of newly built low-end housing and spaces, including recreational facilities, and further deterioration of those built earlier, and their closure.

### **Ecosystem services and transport**

City expansion entails a constant demand for more transport, energy and water, leading to ever growing levels of complexity and potential fragility – sustained by ever increasing levels of technology such as the vertical ‘cleaning towers’ and artificial gardens. The quality of the environment still suffers following the trajectory established during the mid-1980s until the 2010s. Mass transportation, distributed between ground-level and under-ground systems that combine seamlessly with residential, employment, entertainment, and commercial services nodes, is comfortable and efficient, serving the large sector of the middle-classes. Private cars are increasingly a privilege reserved to a small percentage of the population, due to limited licenses and high taxation regimes inspired by the Singaporean-style policies of the early 2020s.

Technology mediates a fragile coexistence between economic growth and environment via the diffusion of ‘green’ solutions, infrastructure and way of working (remote working, telecommuting) a rise in agricultural productivity, and advances in bio-technology. Ecosystem services (quality food, clean water, air and environment) are a priced commodity. Only those aspects of the environment that are valued are protected. Regions that cannot afford investments in new technologies and adaptation measures suffer from extreme events because of climate change and health-threatening crises. Overall, the socio-ecological system is sustained by intensive government intervention and technology.

### **Rural Urban links and Hukou Reform**

The urban-rural is determined by the practices of forced integration by land requisitioning and commercial consolidation of arable land by agro-industrial companies leaving elderly and children living on compensation and possibly on rent while middle-aged and young seek urban employment and residence elsewhere in cities. Despite many government pledges to address the plight of villagers’ property rights after their leasehold is sold to agro-companies, their legal status remains unclear and vulnerable. Registration of migrant workers remains a major task of Residents Committees (RCs) but underfunded. Migrant workers’ mobility continues to cause problems to planners and policy implementers by their unexpectedly large numbers, though these numbers are likely to diminish as labour-intensive industry is replaced by more knowledge-based industry. Ex-farmers continue to be given different access to schooling and medical facilities than those with local, urban-registered hukou because of municipal budgetary constraints.



## The GINKGO Daily

*Native to China, the Ginkgo Biloba is a large tree, normally reaching a height of 20–35 m (some reaching over 50 m). The tree grows at a slow pace, it is usually deep rooted, and very resilient to wind and snow. The Ginkgo Biloba scenario represents a solid, slow and more structured development, with strong roots in the contextual socio-economic and ecological environment, and a progressive build-up of systemic resilience, where the regulative dimension prevails as a driver.*

### Federally-inspired governance

Vital signs - Rate of change GOVERNANCE		GINKGO
Central government	↑↑↑↑	A politics of trust and dialogue, committed to balancing cities and local government independence with cohesion policies. Structural reforms and long term vision.
Central government and local/cities government	↑↑	Major changes in the distribution of power from the Center to new administrative regions. The federalist approach facilitates cooperation among regions.
Participation the case of community and residents committees (RCs)	↑↑	RCs are better paid and staffed and collaborate actively with building representatives and residents associations.
China and the world	↑↑↑↑	China sets an example for a different development pathways.

### Central Government

The Chinese dream of the 2010s-2030s has given way to the New Era vision of human and societal progress and China succeeds in becoming an inspiration for global transformation arising from its embrace of, and subsequent paradigm shift, beyond the globalisation system of the late 20<sup>th</sup> and early 21<sup>st</sup> Century. China shows a different development pathway, based on a federal system of government driven by the pursuit of human and societal progress, where quality and excellence have replaced traditional measurements of economic growth.




### Central Government and local/cities government.

Provincial Governments have become secondary interlocutors, overshadowed by two new, functionally distinct, administrations at regional level (somewhat larger than the old district (xian) level), that reflect a federally-inspired governance framework allowing for an improved communication between the central and local layers of Chinese bureaucracy. The new Urban Regions (URs) that have thrived since the late 2030s, have successfully integrated the rural and urban landscape that dominates the East as well as some central western regions, replacing the original Provinces. URs are thriving centres for technological advancement that resulted from the widespread uptake of open source and crowd-source networks. These began to replace traditional investment patterns in the 2020s and became the norm by the early 2030. In the West, Centre and North East early attempts at massive industrialisation and urbanisation gave way to severe ecological degradation. Following repeated crises, a new direction was taken in the late 2020s and the provinces were also replaced by smaller units: the New Regions (NRs) pursuing alternative development strategies that promoted high quality products for food and recreation for the internal and international markets, in line with Central Government's policy of Solidarity and Dignity for all Regions. Similarly, URs have substantial autonomy in relation to the definition of development objectives and implementation strategies.

A well-structured dialogue between different levels of government ensures the smooth application of policies. Transparency and participatory practices favour the involvement of civil society, social, public and private business in policy-making at the urban regional scale. Senior levels of government are quick to respond to lower-level feedback on plans and policies, which are promptly adjusted. Career promotion criteria include this responsiveness as key. 'People' centred policy is redefined to encourage learning and co-production of solutions with residents and their own

associations. A significant change in the role and standing of planners' professional expertise means that they are now recognized and respected both at central level (ministries) and by local leaders of municipalities. China enjoys the status of major power in a world of global citizens and string city networks.

### **Economy and employment driving force: reforms and cultural renewal**

Vital signs - Rate of change <b>ECONOMY</b>		<b>GINKGO</b>
<b>Economy</b>		Steady state (market economy). Consumption is mainly in terms of access and use. Expanding non-market economy. Absolute decoupling of resources consumption.
<b>Technology</b>		Sustainable solutions and innovations driven by public/private dialogue and cooperation. Leading role of small and medium enterprises working in cluster.
<b>Hukou – social policies</b>		Accessibility to social security and services by all

### **Economic sectors**

The main aim is to promote human and societal progress through development that combines social equity and environmental enhancement. Central government, Urban Regions (URs) and New Regions (NRs) promote social equity and environmental protection as main themes. Circular economy principles and incentives are set centrally but adapted and implemented locally. The use of circular economy principles brings about a radical change, from material growth in volume to service growth in quality, and from open loop terminal recovery to close-loop process control. Central government coordinates and supports all levels of governments in promoting a politics of trust and promotes small and medium sized companies market participation. The local market and private sector joins the overall trend through greater corporate social responsibility and measures aimed at participating in the promotion of human and societal progress.

The economy now follows the 3R' principle of the circular economy (reduction, reuse and recycle), updated to find innovative solutions that also contribute to promote the New Era's precepts of individual fulfilment, systemic resilience and harmony. This ensures that development serves human and societal progress while also enhancing the life-supporting qualities of nature. Absolute decoupling of resource consumption from development is a common goal.

NRs and URs across the country emerge for distinct identities and excellence in the sciences, the arts that are once again seen as inseparable parts of knowledge and progress. By reinforcing regional identity, values and the inter-state cooperation between megalopolises/ cities and between urban/rural, it has provided elements of a new model that has inspired many in the Global South and the Traditional North. Public research institutes and public incentives combine with crowd-sourcing to play a key role in creating industrial clusters able to think and work as a system. The organization and linkage between associations for various purposes among city residents, including formation of NGOs that link cities with each other, is now understood to be key to creativity and innovation, not just for recreation (or as a threat to 'social' stability, as in the period 1990-2020).

### **Employment, migrants and social services**

Registration of households no longer excludes migrant workers from urban-registered access to medical facilities and insurance because they receive sufficient training and the availability of jobs is managed through the highly flexible working weeks and new shorter working hours that results in a greater distribution of job opportunities. Participation in employer/employee social security schemes is common. Funding for equitable provision of medical and schooling facilities is included in plans and developers who ignore them are heavily fined. ECH housing and Public-rented purpose built housing is increased with nearby jobs available for a wide range of skills, with strong price and rent controls. Developers who breach these plans, reducing the stipulated affordable housing, are heavily fined (although this becomes rare as a new value system permeates society).

Security's accountability of security is clear, and serves all (hukou and non-hukou residents). The police take fuller responsibility for security, either by themselves or by fuller training of auxiliaries.

### **Lifestyle: Community values and ecological civilisation**

Vital signs - Rate of change <b>LIFESTYLE</b>		<b>GINKGO</b>
<b>Chinese dream</b>	↑↑↑	Balanced quality of life beyond the consumerism, more equitable society.
<b>Demographic</b>	↔	Stable numbers; Moderate international migration.
<b>Culture</b>	↑↑↑	Community and regional identities and values are reinforced.
<b>Knowledge</b>	↑↑↑	Social innovation shift citizens consumption from ownership to access, "experiencing consumption".
<b>Nature</b>	↑↑↑	The relationship with Nature is central to the human experience and to urban design.

#### **The Chinese dream**

The New Era emerges in city districts across the country in the late 2030s. It seeks to engender a more balanced quality of life beyond the consumerism of the previous decades, and the creation of a more equitable society. Both the New Regions and the Urban Regions are thriving centres for social and cultural exchange, favouring community involvement in development strategies. Social innovation has shifted citizens' consumption patterns towards patterns towards "experiencing consumption" and access, rather than ownership. The emphasis on product and life quality, and the need for environmental recovery since the 2020s crises has ushered in a new generation of users and pro-users (producers and users in one). The introduction of the Fifth Generation of 3D printers has initiated a techno-ecological revolution that redefines the notion of scarcity and limits. Culture individual, family, traditions.

The ecological culture promotes behavioural changes and the blossoming of sustainable solutions and innovations differentiated by the cultures, environment and resources available in the community. The circular economy supports the emergence of a "New urban Village" model (even within large city-regions) in which the care of public spaces (squares, parks) enhances community identity and promotes the start-up of shared initiatives (housing, productions of energy, co-gardening, partly inspired by New York, Singapore and Australian models of the 2020s). Each community is engaged in improving the quality of life of their district and consume mainly local food and regional/national products.

Planners and culture and tourist bureaux develop their selections but also endorse and benignly tolerate locals' own renewals of tradition and initiatives. Locals and ex-villagers are given the opportunity to keep significant buildings or places and develop their own, possibly cooperative, enterprises through their own fund-raising and organisation.

#### **Culture and nature**

Education, research and nature are at the centre of a new human-nature paradigm that returns from the 'exploitation' of nature to the 'gardening' approach".

## City planning and life: network of cities

Vital signs - Rate of change CITY PLANNING AND LIFE		GINKGO
City type	↑↑	Network of small and medium cities, and 'New Urban Villages'. Network of urban cores for megacities.
Public spaces	↑↑↑	Livable cities: citizens participation on defining public spaces.
Social housing and house management	↑↑↑	Mix land use facilitated by the organization of the economy production in small/medium cluster. New housing policies and funding.
Ecosystem services	↑↑↑	Economy growth decoupled from environment. Citizens engagement toward environmental protection is reinforced by the implementation of specific regulations, standards, taxes and incentives for the environmental protection and recovery.
Rural-Urban links	↑↑	Regional planning support the integration of rural and urban function.

### City type

As the repeated crises of the late 2020s led to major administrative restructuring, the Third National Urbanisation Plan issued in 2025 was never implemented. The First Rural and Urban Grand Plan of 2032 provided the foundations for the New Era. Both the New Regions and the Urban Regions are required to develop their land guided by strict adherence to the three precepts, and the imperative of ecological and functional optimisation. The Network of cities and "New urban village" have emerged also in large city regions: multi-functional urban cores and small-medium cities able to offer residential, employment and services opportunities.

### Public spaces and house management

Planners take into account residents' chosen uses of public space even though unanticipated. Incorporated villages are consulted by planners through village committees but also through openly invited petitions, and urban residents are regularly consulted through their Residents' Committees (RCs), for whom official channels for regular reporting up to the district planning committee are opened and RC staff and representatives increased and funded. Relocation into affordable housing in the same area is made a realistic choice, including refurbished heritage housing. A range of housing types and costs are built alongside industrial districts with a similar range of employment and wages. RCs are better staffed and paid, tasked with reporting changes in population and other problems of plan implementation. Volunteers, building representatives and residents' associations report biannually to the RCs who report up to not only the Street but directly to the District planning office. Municipal subsidies to Street offices and RCs for regular cycles of maintenance and refurbishment of low-end housing are increased. Property owners' associations become the main form of local level public participation because property management companies (PMCs) are prevented from manipulating them.

### Ecosystem services and transport

Specific regulations, standards, taxes and incentives are designed to enhance the environment protection and recovery. Local authorities in NRs and URs raise revenue through the Ecosystem Services Tax (land, biodiversity, water), a progressive tax linked to income and wealth that replaces the old Polluter Tax and reduces Income Tax to a minimum. Investments, including from social finance sources, create infrastructure for managing energy, water and waste with minimal ecological impacts. Travel demand is highly reduced and most of the services are at walking distance or easily reachable by bike/public transport. Public transport network is extended, fast and cheap enabling access to employment locations.

### Rural Urban links and Hukou Reform

Rural and urban boundaries are now superseded by the NRs and URs definitions, with the aim of promoting full integration of rural and urban functions. Rural, distant, villagers urbanise on their own terms, building modern low-rise residences, gardening and raising domestic animals on own plots; through agricultural extension they are enabled to form own cooperative/collective

agricultural industry and consolidation; otherwise share-holding in or joining cash-cropping consolidated agriculture; encouraged to form cooperatives for the sale of their products. Law on rural property is reformed in favour of present non-legal 'small housing'. In the case of peri-urban villages being incorporated into the built-up city area, planners tolerate a mix of urban types, including both high rises and villagers' lower-rise, already-built dwellings.

## 5. STORYLINES: PLAUSIBILITY AND DESIRABILITY

A survey was conducted to test and validate the new storylines, and provide initial input to the backcasting exercise. Given the nature of the questions the survey required approximately one hour to complete and resulted in 63 valid responses.

The storylines were found to be highly plausible and internally consistent (see Figure 4): taken both as a whole, and in terms of their four dimensions (urban governance, economy, lifestyles and city planning).

Figure 4 Summary of the main results of the second survey

The Bamboo Time - Plausibility	YES	NO
Urban governance	90%	10%
Economy	76%	24%
Lifestyle	81%	19%
City planning & life	86%	14%
	<b>83%</b>	<b>17%</b>

The Bamboo Time - if current policy framework could possibly lead to such a vision	YES	NO
Urban governance	79%	21%
Economy	80%	20%
Lifestyle	77%	23%
City planning & life	80%	20%
	<b>79%</b>	<b>21%</b>

Ginkgo Daily - Plausibility	YES	NO
Urban governance	65%	35%
Economy	62%	38%
Lifestyle	69%	31%
City planning & life	79%	21%
	<b>69%</b>	<b>31%</b>

Ginkgo Daily - Desirability	YES	NO
Urban governance	90%	10%
Economy	87%	13%
Lifestyle	93%	7%
City planning & life	89%	11%
	<b>90%</b>	<b>10%</b>

Interestingly, the Ginkgo scenario, although it illustrates a true paradigm shift, scored high in plausibility and very high in desirability, with an overwhelming 87.5 % of respondents advocating its pursuance. This lends a solid credibility to the entire exercise, and most importantly - from the methodological viewpoint - demonstrates the value of the participatory iterative approach: despite the many resistances encountered along the process as Chinese participants were repeatedly constrained by the short-termism typical of planning-oriented approaches, and by the associated difficulty in thinking "out of the box" and in accepting to discuss paradigm shifts, the final outcome suggests that the scenario building process ultimately managed to largely win over such resistances and generate acceptance of radically new long term visions that are deemed credible and desirable.

This result has wider implications for the scenario work that aims to explore sustainability paths. Work which, as mentioned in the introduction, is seen as not just desirable but essential and urgent by many. The definition of a widely shared vision of the future that is profoundly transformative in the direction of greater social justice, ecological sustainability and economic viability is precisely the missing step that Meadows claimed to be a condition sine qua non for making progress. Our project, while too limited in its means and reach to be in anyway representative of the case in question (i.e. Chinese urbanisation as a whole), nonetheless provides support for this ethos, which in turn informs the work of an increasing number of scholars, practitioners and stakeholders, including Raskin and Costanza cited earlier.



## 6. STORYLINES: BACKCASTING AND POLICY RELEVANCE

The final part of the URBACHINA participatory process focused on an adapted backcasting exercise. The aim was to validate the survey findings and to explore synergies or divergences between the “New Urbanization Plan, 2014-2020” (NUP) approved in March by the State Council of the People's Republic of China (State Council 2014) and the Bamboo and Ginkgo scenarios, given their high plausibility and desirability.

The need to include a mid-term period that would help policy-makers think of intermediate steps to a 2050 vision was raised by many. The year 2020 was thus proposed as an important target date in the Chinese context as it coincides with the end of the 13<sup>th</sup> Five Year Plan (currently being prepared). The idea was therefore to modify the practice of backcasting, taking the NUP (whose target year is 2020) as a reference point for a mid-term step between 2050 and today, and ask the question: to what extent does the NUP contribute to a transition towards one or the other storyline?

The NUP includes 7 (+2) general principles, 13 categories of policy goals (Table 5) broken down into 43 more detailed objectives (including quantitative targets) and for each we evaluated the likelihood (or not) of each aim contributing towards the aims and changes implied by the URBACHINA storylines. The analysis adopted a simple 3 points scale: 3/green = has the potential to contribute; 2/orange = has limited potential to contribute; 1/red= no contribution (see Table 6).

Table 5 Categorisation of the Major Policy Goals of the NUP

URBACHINA focus areas:	Major NUP Policy Goals Themes
➤ Economy	1. Industry
➤ Economy	2. Green Economy
➤ Economy	3. Finance and Governance
➤ Planning-Governance	4. Land
➤ Planning-Governance	5. Hierarchy of cities
➤ Planning-Governance	6. Coordination policies
➤ Planning-Governance	7. Greening
➤ Planning-Governance/Economy	8. Administration
➤ Planning-Governance/Economy	9. Urban Transport and links
➤ Planning-Governance/Society	10. Pleasant and well served
➤ Society	11. Urban residents & Migrant hukou
➤ Environment	12. Air and water
➤ Environment	13. Resources and environment

Table 6 Analysis of the NUP's potential contribution towards URBACHINA's storylines

Goals	Details	Bamboo	Ginkgo
<b>Significance</b>	(Xinhua 2014)		
Growth	Strong impetus for sustainable economic growth (Xinhua 2014)		
Industrial restructuring	Accelerates industrial restructuring (Xinhua 2014)		
Agriculture	Seeks to solve agricultural problems (Xinhua 2014)		
Cohesion	Balances regional development (Xinhua 2014)		
<b>Basic principles</b>	(Guiding ideology: 1-7) (State Council 2014: Chapter 4)		
1.People	People at the center and equitable sharing (State Council 2014: Chapter 4)		
2.Coordinated policies	'Synchronization of the Four Modernizations' (State Council 2014: Chapter 4)		



Goals	Details	Bamboo	Ginkgo
3.Land and planning	'Layout optimization for efficiency': Efficient use of land (State Council 2014: Chapter 4) Balanced rural and urban development (Xinhua 2014)		
4.Philosophy	'Ecological civilisation, environmentally friendly and low carbon' (State Council 2014: Chapter 4)		
5.Culture, context	'Cultural heritage, highlighting features' (State Council 2014: Chapter 4)		
6.Markets	'Market-oriented and guided by government' – markets' decisive role in resource allocation (State Council 2014: Chapter 4)		
7.Planning and guidance	'Coordinated planning and classified guidance' (State Council 2014: Chapter 4)		
Development model	Need to improve the quality of development (State Council 2014: Chapter 3)		
Scale	The need to rethink the adequate territorial scale: shift to regional and beyond		
<b>Majors Goals</b>	<b>Detailed Objectives</b>		
1.Land	<b>Optimise</b> spatial layout and form, respect <b>ecological carrying capacity</b>		
	Follow the 'National main <b>functional</b> area plan' (State Council 2014: Chapter 8)		
	Improvement of development <b>management</b> system for urbanization areas, agricultural producing areas and <b>key ecological</b> functional zones		
	Build resource and environment <b>carrying capacity</b> monitoring and early <b>warning</b> mechanisms		
	Establish compact urban space structure; optimise urban industry's use of land and <b>output rate per land unit</b> (Li <i>et al.</i> 2014)		
	Form a unified urban and rural construction <b>land market</b> (in CPC 18 <sup>th</sup> Central Committee's Third Plenary, 12/11/13) (Liu 2014)		
2.Hierarchy of cities	<b>Decongest</b> mega cities of the coast, incentivising permanent residence in the central/midland/western urban clusters (State Council 2014: Part 4; Verdini 2014)		
	Increase the number of <b>small and medium</b> cities (Xinhua 2014)		
3.Coordination policies	More collaborative governance, improved coordination (urban-metropolitan), <b>change relationship</b> between State and peripheral institutions (Verdini 2014)		
	The <b>resurgence of State-led regional planning; city-region development</b>		
	" <b>recentralization</b> along with selective <b>decentralization</b> " (Chen, Zhang, Li and Zhang (2014) in: Verdini 2014).		
4.Industry	Exploit the effect of industry's <b>agglomeration and scale</b> as incentive for <b>sustainable</b> urbanization development (Li <i>et al.</i> 2014)		
	Promote <b>transformation</b> and <b>upgrading</b> , turning cities into <b>innovation</b> cradles (Li <i>et al.</i> 2014)		
5. Urban Transport and links	Prioritize development of urban public transport, actively develop large-capacity surface public transport systems (State Council 2014: Chapter 16)		
	<b>Regular railways</b> will connect all cities with more than 200,000 residents by 2020, and high-speed rail will connect those with above 500,000 residents. (Xinhua 2014)		
	<b>Expressways</b> will link cities with over 200,000 residents by 2020. (Xinhua 2014)		
	<b>Civil aviation services</b> will cover about 90 percent of China's population. (Xinhua 2014)		
	Promote <b>low emission</b> and <b>environmentally friendly</b> transportation; city-city transportation should lead to urban clusters assimilation (Li <i>et al.</i> 2014)		
6.Greening	'Promote construction of <b>new-type cities</b> ': <b>green</b> cities [energy, buildings, transportation, recycling parks, green lifestyles]; <b>smart</b>		

Goals	Details	Bamboo	Gingko
	cities [broadband, IT management/planning, intelligent infrastructure, convenient public service; modern industry; innovative social governance]; <b>cultural</b> cities [cultural and natural heritage protection, cultural, sports and leisure facilities, free public facilities: libraries etc] (State Council 2014: Chapter 18)		
7.Green Economy	green development (Xinhua 2014)		
	<b>Green production and consumption</b> will be the norm in the urban economy. (Xinhua 2014)		
8.'Pleasant and well served'	<b>Cultural heritage</b> emphasized through the distinctive characteristics of each city (Xinhua 2014)		
	The <b>services</b> in small towns will be improved. (Xinhua 2014)		
	The urban environment will be harmonious and pleasant with basic public services <b>accessible to all permanent</b> urbanites. (Xinhua 2014)		
9.Finance and Governance	Raise share of direct <b>taxation</b> , improve local tax base, accelerate property tax legislation (in CPC 18 <sup>th</sup> Central Committee's Third Plenary, 12/11/13) (Liu 2014)		
	Financial market: Accelerate <b>interest rate liberalization</b> (in CPC 18 <sup>th</sup> Central Committee's Third Plenary, 12/11/13) (Liu 2014)		
	<b>Fiscal and taxation system reforms</b> should be accelerated to gradually establish a diversified and sustainable urbanization fund safeguard mechanism (Li <i>et al.</i> 2014)		
	Reform of the local financing system, experimenting a combination of less land-consuming methods (State Council 2014: Chapter 25)		
	Main sources of <b>municipal revenues</b> : broad-based income tax, consumption tax and property tax (Liu 2014)		
	<b>Land-based financing</b> : a viable land value capture tool for financing of public infrastructure (Liu 2014)		
	<b>Local borrowing</b> : City governments allowed to raise fund from the capital market (Liu 2014)		
	City <b>leaders</b> : locally elected and mainly respond to the need of the city residents (Liu 2014)		
	<b>Checks and balance</b> : Local leaders subjected to the monitoring of the city people's congresses that have full representation from the residents (Liu 2014)		
	<b>Grass-root governance</b> arrangements (such as homeowners associations) will emerge to protect collective property rights commonly seen in urban settings (Liu 2014)		
10.Administration	Government should <b>shift to service-oriented</b> government (in CPC 18 <sup>th</sup> Central Committee's Third Plenary, 12/11/13) (Liu 2014)		
	'Remove GDP as an assessment indicator <b>in restricted-development regions, ecologically fragile regions and key national poverty alleviation</b> counties' (State Council 2014: Chapter 27 )		
	The <b>systems</b> of household registration, land management, social security, taxation and general administration will be <b>improved</b> . (Xinhua 2014)		
11.Air and water	<b>Clean air and safe drinking</b> water will be available for all. (Xinhua 2014)		
12. Resources and environment	<b>Ecological civilization</b> , reducing the interference and damage to the natural, promoting green low carbon production and life style and healthy urban construction and operation mode' (Li <i>et al.</i> 2014)		
	Resource pricing, <b>paid-use-of-resource system</b> and ecological compensation system (State Council 2014: Chapter 27)		
13.Urban residents &	Differentiated use of Hukou rules: increasingly strict control of the urban population as you move from cities of 0.5 million to more		

Goals	Details	Bamboo	Ginkgo
Migrant hukou	than 5 million. Goal is to 'promote rural migrant entitlement of basic public services' (Li <i>et al.</i> 2014)		
	Aim to 'enhance the level of human capital' and broaden the employment channels' information network (Li <i>et al.</i> 2014 ; State Council 2014: Chapter 7)		
	The Hukou system thus remains a crucial institutional tool, despite criticisms that it has led to inefficient distribution of people across the country (Verdini 2014)		

By and large, the evaluation suggests that NUP contributes to move from the current situation to one that will serve the transformative paths of both storylines, but – as to be expected – it does so more consistently for Bamboo (closer to BAU) than for Ginkgo which eventually requires a radical departure from current paradigms. In terms of the vision underlying Ginkgo's storyline, the NUP propositions that are not consistent with it are those relating to land use, of territorial governance, and around the use of the hukou system. We also note that many ideas put forward in Ginkgo, which imply a significant departure (or even a paradigm shift) from current trends in the four main areas of the storyline, and which partly touch upon the 'ultimate drivers' discussed by Raskin and colleagues (2002) – are absent in the NUP. This can partly be explained by the relatively short-term nature of NUP compared to our storylines, however, limited reference to social and individual values may mean that the pursuit of a Ginkgo future becomes less likely.

## 7. COMPARING URBACHINA STORYLINES WITH UNDP (2013) AND WB-DRC (2014) SCENARIOS

The distinction between proximate and ultimate drivers, proposed by Raskin and colleagues (2002), is used in the table below to highlight key aspects of the scenarios produced by the Word Bank and the Development Research Center of the State Council (DRC) (World Bank and DRC 2014) and by the UN (UNDP 2013). The two studies differ in terms of the range of contributing organisations and the methodologies adopted, however both have elaborated explorative, qualitative and quantitative scenarios focussed on territorial Chinese urbanisation and on 2030 as time horizon. The resulting Scenarios served the purpose of identifying a set of policy priorities and recommendations directed to guarantee the smooth change towards a more sustainable and inclusive urbanisation.

Word Bank/DRC study presents two alternatives: the Business as Usual (BAU) and Reform Scenarios with the aim of weighing the costs of reforms necessary for an 'efficient growth through better allocation of land, labour, and capital'.

The four UNDP Scenarios - Business as Usual (BAU), the Speed with Gaps (SG Scenario), the Moderate Pace with increased investment (MP Scenario) and the Moving More Slowly maximising the liveability (MMS) –are devised with a focus on balancing quality and speed in urbanisation. For the purposes of this comparative analysis, the SG Scenario was excluded because of its proximity to the BAU.

All the Scenarios considered have developed, and in most cases quantified, the so-called proximate drivers. The table below exemplifies a cross comparison between WB/DRC and UNDP Scenarios foresight of changes in degree of urbanisation, GDP growth, total factor productivity and governance reforms. Conversely, the ultimate drivers are less considered and most of foresight is focused on those policy interventions related to the inclusion of rural migrants in the urban structures and services. Thus, the reviewed Scenarios examine especially those levers that will be responsive with relative short time of intervention.

Table 7: Comparison WB/DRC Scenarios and UNDP Scenarios: proximate drivers

PROXIMATE DRIVERS		Population	Economy	Technology	Governance
THE WORLD BANK URBAN CHINA SCENARIOS 2030	BAU	Urbanization rate increases from 52% to 66%.	The primary industry will continue to decline and so the secondary industry whereas the tertiary industry will constantly rise. GDP (average over the past 5 years) slows from 8.3 to 4.3.	Total Factor Productivity decreases from 2.2 to 2.1	No reform for local borrowing or land revenues, thus fiscal space would not be sufficient to cover spending for urbanization.
	REFORM Scenario	Urbanization rate increases from 52% to 70%. Diverse landscape of cities reflecting the comparative advantage of individual cities.	Income growth slows but higher and more balanced compared to BAU. Growth of tertiary sector constituting more than half of GDP by 2030. GDP (average over the past 5 years) slows from 8.3 to 5.3.	Total Factor productivity increases from 2.2 to 2.5. Main drivers: higher rate at which people move from rural to urban areas and among cities and the higher productivity in more efficient cities.	Major reforms in land rights and use, improvements in urban finance policies and reforms in urban planning and design.
PROXIMATE DRIVERS		Population	Economy	Technology	Governance
THE UN CHINA HUMAN DEVELOPMENT REPORT SCENARIOS 2030	BAU	Urbanisation is stabilised at 68%: 80% in the eastern coast; north eastern 63%, eastern 66%, central regions 68%.	The primary industry will continue to decline and so the secondary industry whereas the tertiary industry will constantly rise. GDP will expand RMB 132 trillion by 2030, with annual growth rate 6%, urban areas contribute to GDP with RMB 99 trillion GDP per capita is expected to cross RMB 100,000.	Continuation of past trends, no major reforms.	Continuation of past trends, no major reforms.
	MP scenario	Same as BAU.	Urban areas GDP is expected RMB 110,000 trillion; GDP per capita of urban resident RMB 112,000	Technology industry leads the market;	The central Government focus on improving city residents' quality of life by better responding to various demand. Increased investments in emissions reduction and environmental protection.
	MMS scenario	Urbanisation will be at 65%. Stable urbanisation speed. More balance growth and more diversified types of urban form. By 2030	Urban GDP is expected RMB 103,000 trillion, GDP per capita of urban resident RMB 110,000	Technology plus the development of social and educational services.	Increased investments in all regions aim at improving liveability, household well-being, housing standards and the overall quality of city life. Efficient use of resources will be paired with greater investments in reducing emissions and protecting the environment.

Table 8: Comparison WB/DRC Scenarios and UNDP Scenarios: ultimate drivers

ULTIMATE DRIVERS		Values and needs	Knowledge & understanding	Power structure	Culture
THE WORLD BANK URBAN CHINA SCENARIOS 2030	BAU	Continuation of past trends, no major reforms.	Continuation of past trends, no major reforms.	Continuation of past trends, no major reforms.	
	REFORM scenario	Efficient growth through better allocation of land, labor, capital. A market based approach. A model that can be more inclusive and sustainable than the past.	Improvement of the performance evaluation of the local officials and increase local government management capacities and transparency. Improvements of institutions and instruments directed to manage the environmental pressures: data collection and dissemination, environmental courts, market-based incentives.	Reform toward a resident-based hukou system to create a mobile and versatile labour force with equal access to common standard of public services. The total annual costs of all urban public services, infrastructure, and social housing would average 6.1 % of GDP in 2013–30, with a peak of 7.3 % in the early period (2013–17). Land reform increases the compensation rural residents receive from land conversion, thus improving the distribution of wealth.	
THE UN CHINA HUMAN DEVELOPMENT REPORT SCENARIOS 2030	BAU	Continuation of past trends, no major reforms.		Elimination of dual treatment of workers within cities by 2030. The cost of fully integrating a rural worker is assumed to be around RMB 80,000 .	
	MP scenario	Urbanisation balance quality (better service and improved economic, social and environmental performance) and speed (quick realisation of extensive urbanisation, which requires larger economic output as basis).		Investments to improve basic social welfare for migrants, and remove barriers for integrations. At 2030 the cost for integrating migrants RMB 100,000 per person. Public house account 40% of the total.	
	MMS scenario	Urbanisation aims at quality first (better service and improved economic, social and environmental performance) and slow down the speed (quick realisation of extensive urbanisation which requires larger economic output as basis).		In addition to the urban registration system reform, programmes and cost-sharing mechanisms between origin and receiving province have been put in place to support the integration. At 2030, the cost of integrating migrants RMB 150,000 per person. The provision of public house will increase, accounting about 50% of the total.	

Purely qualitative *storylines* aimed at 2050 offer the opportunity to anticipate surprises by looking at the ‘ultimate drivers’ that shape society and human experience; something that *scenarios* based on extrapolation of trends (i.e. mainly explorative) cannot do.

The application of the proximate/ultimate drivers scheme to the URBACHINA storylines facilitates the cross reading of the *scenarios* and the *storylines* as consecutive in time (2030-2050), highlighting complementarity and differences.

The WB/DRC Reform Scenario and the UNDP the Moderate Pace with increased investment (MP) Scenario are in line with the UBACHINA Bamboo Storyline. The focus is on ensuring an effective economic growth from which will drive the improvement of the social conditions and services. In



the second URBACHINA survey, the majority of respondents identified four shifts required to reach the BAMBOO storylines:

- tax reform,
- land reform and urban planning
- urban development codification,
- inclusion of market based instruments.

These changes correspond indeed largely to the contents of policy priorities identified by the WB/DRC report to reach the Reform Scenario. These reforms in the pursuit of growth do not prospect a paradigm shift with respect to the current trends, and the recurring question (and concern) among the survey and workshop participants has been to what extent the proposed storyline is able to guarantee sustainability in long term. Looking at BAMBOO's ultimate drivers can help to shed light on the risks and consequences of policy choices taken today (or for the short and medium term future), and can support the formulation of anticipatory policy measures. It can help, for example, to consider which might be the risks of a fiscal reform in term of competition among regions and citizens' equal opportunity in a context of rapid economic growth and change of values, and support the formulation of accompanying measures.

The WB/DRC Reform Scenario contains seeds of an evolution towards a Ginkgo storyline. Indeed, survey respondents indicated among the most considered shifts in the current policy framework to reach the Ginkgo storyline two-policy priorities of the Word Bank/DRC report:

- the innovation of the criteria for the appointment of city administrators and
- the stakeholders' participation in the policymaking, especially urban planning.

While the UNDP MMS Scenario reflects a policy approach closer to the Ginkgo storyline evolution, in which the pace of economic growth is slowed in favour of substantial social and environmental improvements. Clearly, here the importance of envisioning is to develop an impression of a *desirable* future (hence the emphasis on a participatory approach). The qualitative, and more extreme vision, of the URBACHINA Ginkgo storyline complements the MMS Scenario through the representation of long term positive effects of social and environmental policies in society's intangible assets: values and needs, in culture, knowledge and understanding. These effects should be evaluated, even though they are hardly quantifiable through indicators and rates of change, to support the formulation of policies able to understand and anticipate the structural changes and challenges of cities and society.

Table 9: URBACHINA storylines - proximate and ultimate drivers

PROXIMATE DRIVERS		Population	Economy	Technology	Governance
URBACHINA STORYLINES 2050	BAMBOO	Growing population. Megalopolises, 'Harmonious Garden Cities'. Vertical and horizontal expansion. Rise of East and Centre. West rises then declines.	Moderate 'harmonious green' growth (market economy). Consumption thrives. Partial privatizations, and partial decoupling of resources consumption from economic growth.	Significant advances driven by major investments in innovation and technology. Leading role of multinationals.	A politics committed to 'harmonious green' economic growth through a strong government and an efficient economy integrated in the World Economy. Lack of structural reform. High level of continuity with past trends; The tax reform empowered cities to raise their own revenues - High competition between regions.
	GINKGO	Stable numbers. Network of small and medium cities, and 'New Urban Villages'. Network of urban cores for megacities.	Steady state (market economy). Consumption is mainly in terms of access and use. Expanding non-market economy. Absolute decoupling of resources consumption.	Sustainable solutions and innovations driven by public/private dialogue and cooperation. Leading role of small and medium enterprises working in cluster.	A politics of trust and dialogue, committed to balancing cities and local government independence with cohesion policies. Structural reforms and long-term vision. Major changes in the distribution of power from the Center to new administrative regions. The federalist approach facilitates cooperation among regions.
ULTIMATE DRIVERS		Values and needs	Knowledge & understanding	Power structure	Culture



STORYLINES URBACHINA 2050	BAMBOO	Chinese dream: entertainment, material wellbeing.	Digital information and entertainment are pervasive dimensions of life. Top-down cultural pedagogy persists.	Hukou – social policies: use of increasingly sophisticated measures (and technology) to direct the movement of workers, goods and services. Limited social integration; widening of income gap.	Thriving individuals and lifestyles driven by digital creativity
	GINKGO	Chinese dream: balanced quality of life beyond the consumerism, more equitable society.	Social innovation shift citizens consumption from ownership to access, “experiencing consumption”.	Hukou – social policies: Accessibility to social security and services by all	Community and regional identities and values are reinforced.

In terms of wild cards (defined as combining impact and probability), neither World Bank/DRC nor UNDP studies take these into consideration. This is perhaps the most significant difference compared to the exercise of defining storylines carried out in URBACHINA. The workshops and survey identified a range of wild cards for Chinese urbanisation, showed in Table 10. The policy implications of these are very significant and their analysis and discussion is a crucial part of a process of scenario development. Failure to contemplate wild cards may seriously undermine the solidity of scenarios.

Table 10: URBACHINA storylines – wild cards proposed in the surveys and workshops

	Main wild card proposed
Governance	Party structure change
	Large Ngos movement
	Political upheaval in China that leads to fundamental change in the political system not necessarily in a favorable direction for the rest of the world
	Social discontent triggers deep political change
	World War III/Energy war
	Regional conflicts
	Terrorist attach
Economy	Drastic inflation
	Reduction of china GDP
	Return to protectionism
	Massive development of collaborative/sharing economy
	Global internet
	Colonization of moon or other space object
	Innovation boom in China (biotech?)
Lifestyle	Green energy production breakthrough
	Change in values of citizens (more wellness, less wealth)
	Technology breakthrough in addressing pollution issues
City planning and life	Pandemic of respiratory transmitted disease
	Large scale water contamination
	Ecological disaster that impact health and welfare in megalopolis
	Climate change catastrophe
	Global warning leading to massive long term drought over much of northern China
	Massive exodus of middle-income households

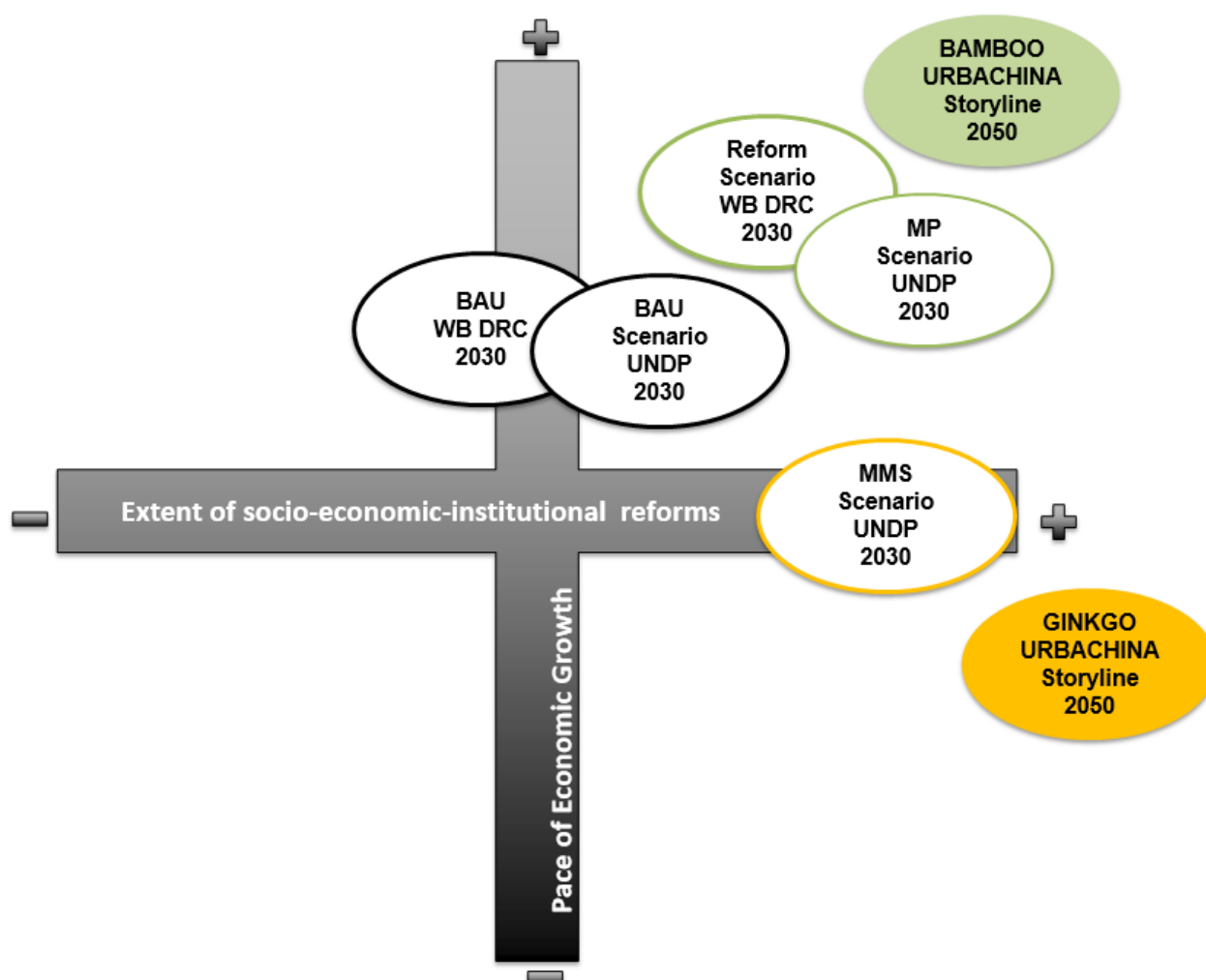
## 8. POLICY IMPLICATIONS

### Scale, speed, timing and timelines

Despite their different – and independent – origin, the six scenarios represented in Figure 5 can be easily integrated into the URBACHINA scenario space. The adoption of a two-dimensional scenario framework (which is very common in the studies we reviewed), based on two selected dimensions (extent of policy reforms on the one hand, pace of the economic growth on the other) effectively captured the main driving uncertainties of sustainable urbanization, explored by the UNDP, Worldbank/DRC and URBACHINA.

Significant differences are found between the six storylines, which however all concentrate in a rather limited area of the graph, characterised by a (more or less radical) governance transition and the associated policy reforms: business as usual is not an option, whether in terms of credibility or desirability, as shown by both the WB-DRC baseline and the UNDP “Moderate pace” scenarios, which are explicitly deemed insufficient to ensure a virtuous transition towards sustainable urbanization.

Figure 5 Comparing UNDP, WB-DRC Scenarios and URBACHINA storylines



On the other hand, although with sizeable variations, the relative proximity of all storylines in the graph leads to confirm that the urbanization process can hardly be decoupled from - a more or less sustained – economic growth. Scale, speed and timing can then make the difference and are likely to ultimately characterize the governance transition towards more or less socially and ecologically sustainable urbanisation.

The WB-DRC “Reform” scenario offers many similarities with the URBACHINA “Bamboo”, and is accordingly its close neighbour on the graph. The main challenge it appears to pose is the reconciliation of a sustained economic growth with an ambitious reform package, and one could wonder to what extent such a goal is realistically achievable. On the other hand, its time horizon is much closer than for Bamboo (2030 vs 2050), which could suggest that this WB-DRC scenario may be an illustration of a medium term step in the longer term transition towards a “Bamboo future”.

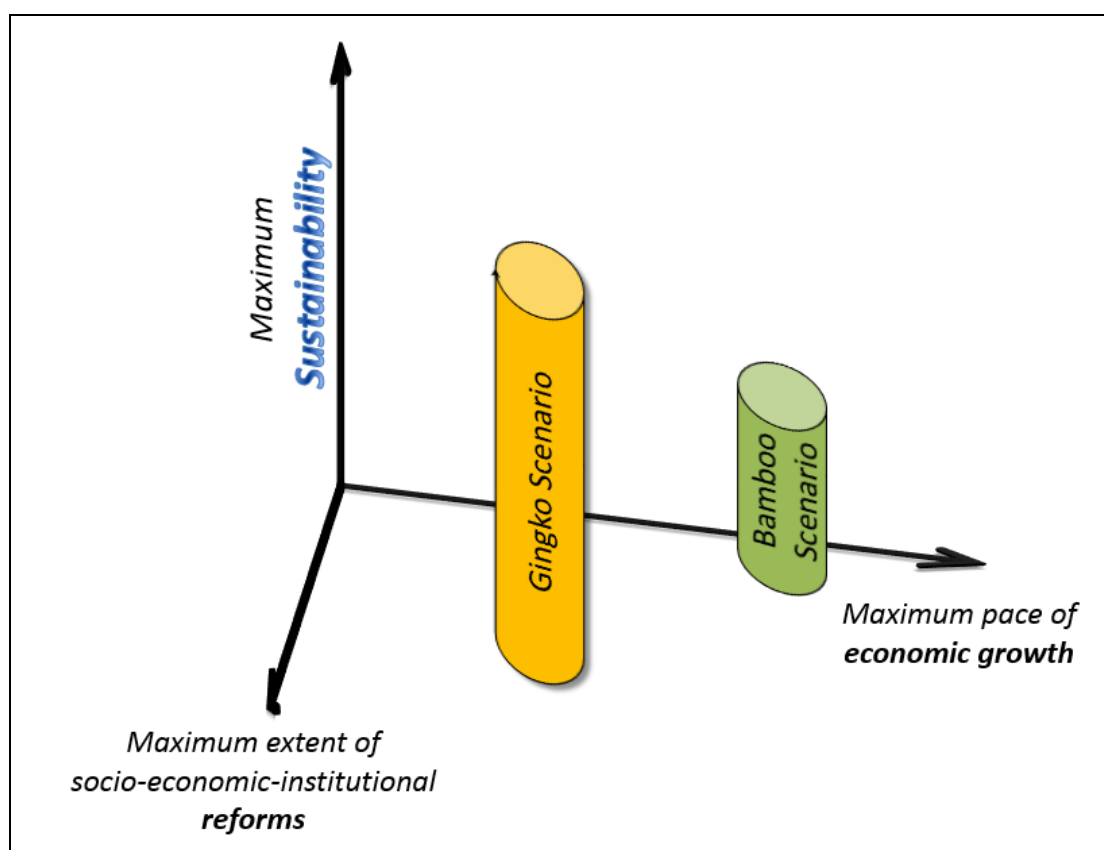
A similar interpretation can be ventured for what concerns the comparison between the UNDP’s “Slower/liveability” scenario and the URBACHINA’s “Ginkgo”. The nature of the reform packages they propose is rather similar, and they are accordingly close neighbours in the graph. Therefore, again we find grounds for a possible interpretation of “Slower/liveability” as the stepping stone to “Ginkgo”, with the pace of economic growth further slowing down in the medium/long term (a realistic perspective). Although such transition could turn out to be less straightforward, considering the limited attention devoted by the UNDP option to issues such as the reduction of inequalities, and to the radical reorientation of the urban form/design and governance model, which feature as fundamental pillars of the Ginkgo storyline.

In fact, both the Bamboo and the Ginkgo exhibit as a distinct characterisation the recognition, in policy formulation, of the importance of preserving/enhancing cultural values and knowledge sharing as fundamental ingredients in the pursuance of long term urban visions where the wellbeing of citizens is the overarching objective.

### Sustainability and lock-in

There is an additional dimension that needs to be included in the overview offered in Figure 5: the overall sustainability of the alternative scenarios and storylines as they progress to 2030 and 2050.

Figure 7 Comparing the sustainability of URBACHINA Storylines



Such 3-D representation actually suggests a dynamic interpretation of the expected sustainability performance of the storylines over time, showing that in the longer term (2050), policies that would embrace a relative slow-down of GDP growth are likely to achieve a higher sustainability.

Ultimately, it is important to remember that scenarios are intended as a platform for inquiry, debate, and reflection about the multiple options and combination of measures that can best serve strategic aims. The adapted backcasting exercise (described in Section 6) is a good illustration of how this simple participatory method of scenario building can act, *inter alia*, as a form of strategic impact assessment, showing to policy makers in which direction existing strategic policies (such as the New Urbanisation Plan) may be leading them into the future. They help to ask the question: “where are we heading with these strategic policies?” and in doing so, to consider more complex and value based dimensions linked to “ultimate drivers”. They may also, crucially, help identify directions and policy measures that will lead to lock-in of patterns such as high-carbon urban design, or inefficient urban sprawl – which conflict with sustainability objectives.

### **Pushing boundaries and paradigms towards desirable futures**

By combining a participatory iterative process with explorative, normative and envisioning dimensions, the URBACHINA forward looking process provides the possibility to question deeply ingrained development models. Proposing such an approach to envisioning the future in a context strongly influenced by plan-based policy and decision making – such as the Chinese one – added several challenges, and yet this limited experience confirms the power of scenario/storyline building as a means to reflect and learn.

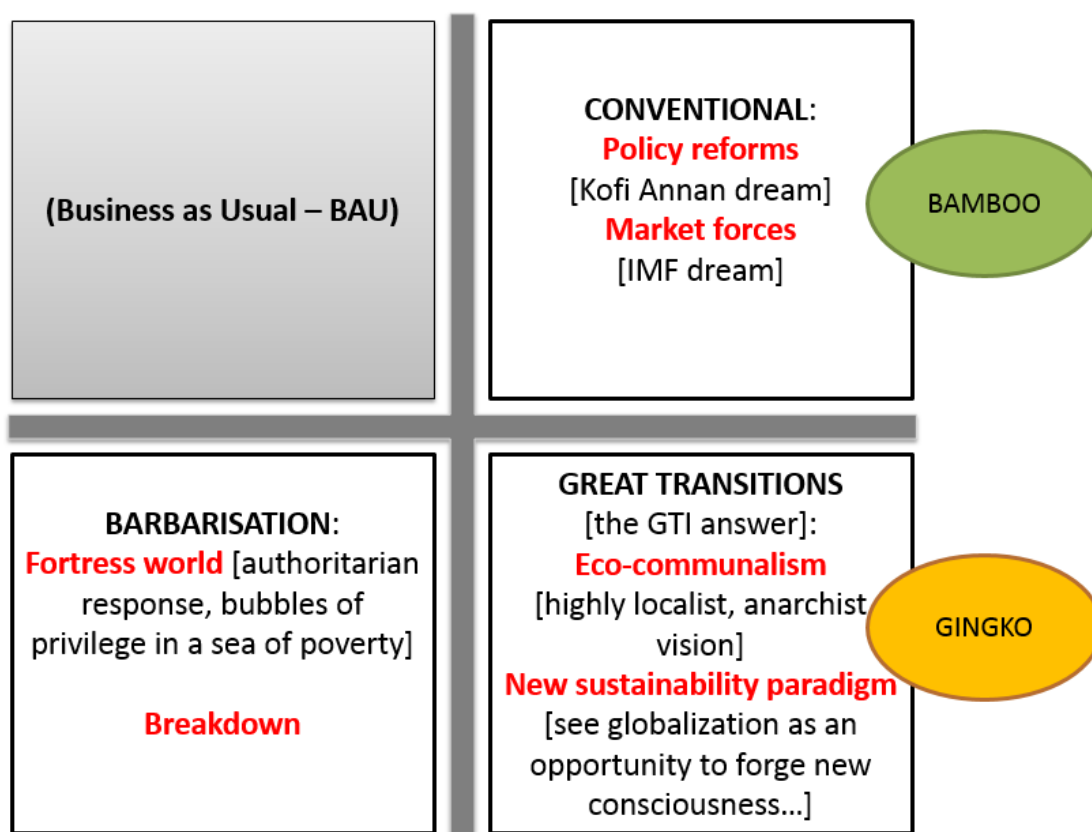
In practice, the rigidity, and top down planning mode can partly inhibit envisioning and normative approaches to scenario building. This can lead to difficulties, and sometimes resistance, to imagine a future where some of the current prevailing features and constraints are removed or radically changed. This difficulty with highly differentiated possible futures leads, for example, to the incorrect definition (or perception) of some uncertainties as wild cards (e.g. the end of the Hukou system).

Nonetheless, it is noteworthy that when a radically alternative storyline (Ginkgo) is presented, framed with detailed attention to the character and peculiarity of the socio-economic, cultural and environmental context, the feedback is positive both in terms of plausibility and desirability. Ultimately, the aspiration transpiring from the experts’ feedback points towards a rather shared vision of “utopian” future.

### **Methodological implications: Archetypal worldviews and futures**

There are a few more reflections worth sharing on the parallels between URBACHINA’s work and that of the World Bank/DRC and UNDP. The URBACHINA experience has confirmed, once more, that scenario categorisations tend to fall within archetypal types that have marked the characterisation of alternative futures through the ages (Clardy 2011). This idea is discussed in detail, specifically in terms of ‘archetypal worldviews’ that influence, inform and shape scenario-building and envisioning, by Raskin and colleagues (2002). Figure 6 presents their main archetypal worldviews in a figure that echoes the URBACHINA scenario space (above, Figure 6): essentially there is a perfect overlap between the two, while the ‘conventional’ and ‘great transitions’ worldviews coincide with the spirit of the Bamboo and Ginkgo storylines, respectively.

Figure 6: Archetypal worldviews (Raskin et al 2002) and URBACHINA's storylines



In terms of methodology, we also note that the simple exercise of ‘backcasting’ using the intermediate target of an existing policy statement had the additional advantage of improving the internal consistency of the two storylines, by allowing the research team and the workshop participants to think in detail at the storylines possible implementation using the 43 objectives as a platform for discussion. In URBACHINA’s process, this adapted form of backcasting has demonstrated its potential for the exploration of sustainable city futures. This type of exercise in a planned-state capitalist economy like China’s partly reveals the likely constraints to normative projects that do not arise from central government.

### Six major narratives for urban futures exploration

In order to broaden the basis for our final reflections on urban futures, URBACHINA organised an international conference on: “*Urban Futures Squaring Circles 2050: China, Europe, World*” (UFSC2050, held in Lisbon, 10-11 October 2014), with keynote speakers and delegates (see <http://www.ufsc2050.ics.ul.pt/> for details and output documents) representing a wide range of scholars and practitioners from 28 countries. The conference highlights (see [http://www.ufsc2050.ics.ul.pt/?page\\_id=400](http://www.ufsc2050.ics.ul.pt/?page_id=400) ) suggest that there are **six major narratives** that cut through the 80 papers presented and the 10 keynotes delivered, which are relevant for Europe and China and which largely support and further emphasise the findings presented here in relation to visions, scenarios and storylines:

- **The goal:** many agree that this is a time of transition and that the future of cities will be marked by new priorities that are being negotiated at all layers of governance and across geographical scales. The tension between planning for growth, or for the people, seems to encapsulate the range of possible future directions.
- **Insufficient progress:** in reconciling the pursuit of urban growth and the need to achieve sustainability and resilience of cities globally. The rhetoric of green, smart and low-carbon clashes with assessments of cities’ metabolic performance.

- **Global dynamics and networks:** many of the drivers of change and transition are global and there is a perceived need for better dialogue and collaboration across countries and continents. Is it time for a global network of cities?
- **Scale:** at the same time, there is a demand for spaces and opportunities to promote and pursue creativity and innovation at the local scale, harnessing the potential of small scale initiatives.
- **“For” and “with” the people:** arguments that call for planning to aim at human flourishing, and greater equity, combine with the need for participatory governance capable of planning with the people.
- **Speed:** all the above is taking place at unprecedented speed, and scale. This reveals the fundamental inadequacy of our planning and foresight processes and tools, struggling to keep up with global and local dynamics and changes. Will it turn out right?


### **Implications for research on Urban Futures**

Finally, the identification of research priorities for the exploration of urban futures is an important part of our work. The ten keynote speakers and over 170 delegates of URBACHINA's conference (Urban Futures Squaring Circles 2050: China, Europe, World – see: <http://www.ufsc2050.ics.ul.pt/> ) contributed to identify priority areas/questions for future research, concerning knowledge gaps and needs (from a methodological or conceptual/ disciplinary/ policy perspective). The result is presented in Table 11. While a few recommendations were specific to the Chinese context, most are applicable in many world regions and to urbanisation at different stages of development.

The Social and Human Factor received particular emphasis, together with governance and planning issues, including futures studies. Perhaps it is worth reflecting on the more limited emphasis given to environmental, resources and technological issues (the conference specified the need to reflect on sustainable urban futures).



Table 11: Research priority for the study of urban futures (UFSC2050)

	<p><b>Social and human factor</b></p> <ul style="list-style-type: none"> <li>• Quality of urban welfare</li> <li>• Measurement (transdisciplinary) of human flourishing</li> <li>• Social justice; loss of civil liberties (terrorism etc.)</li> <li>• Creation of robust, sustainable and smart social infrastructure</li> <li>• Internet (and social media) as tools for increased participation of Civil Society in future city development</li> <li>• Cities as the venue of the integration of cultural diversity; Collaborative and integrative social systems</li> <li>• Urban governance and the integration and involvement of migrants (especially China)</li> <li>• Building a Chinese urban identity, by re-interpreting its own spatial culture</li> <li>• Culture and creativity as factors for sustainable urban growth and human development</li> <li>• Low-impact living (links to section 4 below)</li> <li>• Divide between culture-nature (and urban-rural)</li> <li>• Human dimension of neighborhoods</li> <li>• Urban competitiveness vs. social and economic equity</li> <li>• Gender and urban development processes</li> <li>• Other “classic topics” mentioned: Demographic change/population ageing; Mobility for people</li> </ul>
<p><b>Governance and institutional reforms</b></p> <ul style="list-style-type: none"> <li>• Political innovation and institutional building</li> <li>• Urban governance (and disambiguation!) of new socio-territorial configurations (megapolises, city-regions, global cities etc.)</li> <li>• Land management reforms (especially China)</li> <li>• Empowerment of small towns/villages (especially China)</li> <li>• Adapt legislation on property rights (housing) to a more urbanized China</li> <li>• Higher education reform</li> <li>• Participatory governance systems and new methods for public choice, decision and deliberation</li> <li>• Ex-post evaluation of reforms</li> <li>• Transition towards a knowledge-based economy and the economic restructuring of cities</li> </ul>	<p><b>Urban/territorial development and planning</b></p> <ul style="list-style-type: none"> <li>• Resilience of urban systems</li> <li>• Post-disaster urbanism</li> <li>• Relation between urban and regional development (how do visions at different scale influence each other?)</li> <li>• Urban-rural interactions (as opposed to current bias on the city)</li> <li>• Defragmentation of knowledge =&gt; holistic approach to city development and welfare</li> <li>• Regional development strategies and networking between cities</li> <li>• Successful public spaces</li> <li>• Desertification of rural areas</li> <li>• Urban growth vs shrinking: including the issue of counterurbanization and bottom-up production of space by an emergent Transition culture (especially Europe)</li> <li>• Local production on rural belts of cities</li> <li>• Relation between market forces, urban planning policies and city configuration</li> </ul>
<p><b>Resources, technology and environment</b></p> <ul style="list-style-type: none"> <li>• Scarcity: urban resources requirements and consumption patterns for sustainability</li> <li>• Material flow analysis at urban level</li> <li>• Urban economic impacts of natural hazards and climate change</li> <li>• The regional (indigenous) innovation concept and the role of cities as innovation hubs</li> </ul>	<p><b>Future studies</b></p> <ul style="list-style-type: none"> <li>• Urban transition to sustainability</li> <li>• Getting rid of outworn assumptions/development models</li> <li>• Be global without being globalized and preserve cities innate character</li> <li>• Method(s) to invite creative and inclusive actions for future urban visions and its efficient dissemination through appropriate media</li> <li>• Future convergence of urban visions – plausible, desirable? (EU, US, Asia)</li> <li>• Critical analysis and assessment of scenarios in the practice of strategic planning in communes, city and regions</li> <li>• Strategic approaches (assuming flexibility and taking into consideration various future scenarios) in spatial planning</li> <li>• Socio-technical integrations: humans, machines and their cyber-physical interactions.</li> </ul>

## 9. PROJECT IDENTITY

PROJECT NAME	Sustainable Urbanisation in China: Historical and Comparative Perspectives, Mega-trends towards 2050 (URBACHINA)
COORDINATOR	Francois Gipouloux (CNRS, Paris, France <a href="mailto:Gipouloux@ehess.fr">Gipouloux@ehess.fr</a> )
SCENARIO WORK COORDINATORS	Andrea Ricci (Institute for the Study of Integrated Systems, Rome, Italy <a href="mailto:aricci@isis-it.com">aricci@isis-it.com</a> ) Olivia Bina (Institute of Social Sciences of the University of Lisbon, Portugal <a href="mailto:o.c.bina.92@cantab.net">o.c.bina.92@cantab.net</a> )
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CONSORTIUM	<ul style="list-style-type: none"><li>• Anhui Academy of Environmental Science Research – AAESR –Hefei, China</li><li>• Centre National de la Recherche Scientifique – CNRS –Paris, France</li><li>• East China Normal University – ECNU –Shanghai, China</li><li>• Enterprise Research Institute of Development Research Center of the State Council – DRC –Beijing, China</li><li>• Institute of Finance and Trade Economics, Chinese Academy of Social Sciences – CASS –Beijing, China</li><li>• Institute of Geographical Sciences and Natural Resources Research, Chinese Academy of Sciences – CAS –Beijing, China</li><li>• Instituto de Ciencias Socia da Universidade de Lisboa – ICS – Lisbon, Portugal</li><li>• Istituto di Studi per l'Integrazione dei Sistemi – ISIS –Rome, Italy</li><li>• London School of Economic and Political Science – LSE – London, United Kingdom</li><li>• Renmin University of China – RENDA –Beijing,China</li><li>• Service Enterprise Research Unit, the University of Birmingham – Uob-SERU – Birmingham, United Kingdom</li></ul>
EUROPEAN COMMISSION	Cristina Marcuzzo - DG Research and Innovation, European Commission <a href="mailto:Cristina.MARCUZZO@ec.europa.eu">Cristina.MARCUZZO@ec.europa.eu</a>
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WEBSITE	<a href="http://www.urbachina.eu">www.urbachina.eu</a>
FOR MORE INFORMATION	Andrea Ricci (Institute for the Study of Integrated Systems, Rome, Italy <a href="mailto:aricci@isis-it.com">aricci@isis-it.com</a> ) Olivia Bina (Institute of Social Sciences of the University of Lisbon, Portugal <a href="mailto:o.c.bina.92@cantab.net">o.c.bina.92@cantab.net</a> )

## Bibliography

- Bina, O., Balula, L., Ricci, A. and Ma, Z. (Eds.) (2013) State of the Art Report: Sustainability dimension of urban infrastructure and services, URBACHINA Project Report no. D4.1, Instituto de Ciências Sociais (ICS), Institute of Studies for the Integration of Systems (ISIS), and People's University (RENDIA), 28 February 2013, Lisbon.
- Clardy, A. (2011) Six Worlds of Tomorrow Representing the Future to Popular Culture, *World Future Review*, Summer, 37-48,
- Costanza, R. and Kubiszewski, I. (Eds.) (2014) Creating a Sustainable and Desirable Future. Insights from 45 Global Thought Leaders, World Scientific Publishing, London.
- Hu, A., Yan, Y. and Wei, X. (2014) China 2030, Springer, Berlin.
- Li, S., Li, F. and Ji, X. (2014) Exploration of Future Prospects and Path of Sustainable Urbanisation of China. In International Conference on Urban Futures Squaring Circles, Institute of Social Sciences of the University of Lisbon and Calouste Gulbenkian Foundation 10-11 October 2014, Portugal, available at: [http://www.ufsc2050.ics.ul.pt/?page\\_id=398](http://www.ufsc2050.ics.ul.pt/?page_id=398).
- Liu, Z. (2014) Urban Governance and Finance in China 2050. In Urban Futures Squaring Circles: Keynotes (Eds, Bina, O., Balula, L. and Ricci, A.) Institute of Social Sciences of the University of Lisbon, Portugal, available at: <http://hdl.handle.net/10451/12185>.
- Nowack, M., Endrikat, J. and Guenther, E. (2011) Review of Delphi-based scenario studies: Quality and design considerations, *Technological Forecasting and Social Change*, 78, 9, 1603-1615.
- OECD and CDRF (2010) Trends in Urbanisation and Urban Policies in OECD Countries: What Lessons for China?, Organisation for Economic Cooperation and Development (OECD) and China Development Research Foundation (CDRF), <http://www.oecd.org/dataoecd/2/18/45159707.pdf> (accessed: 29/10/10), Paris.
- Raskin, P., Banuri, T., Gallopín, G., Gutman, P., Hammond, A., Kates, R. and Swart, R. (2002) Great Transition: The Promise and Lure of the Times Ahead, A report of the Global Scenario Group, <http://www.gsg.org/gsgpub.html> (accessed: 10/9/10).
- State Council (2014) New Urbanization Plan, 2014-2020, (In Chinese: Guojia Xinxing Chengzhenhua Guihua 2014-2020), State Council of the People's Republic of China, <http://politics.people.com.cn/n/2014/0317/c1001-24649809.html> (accessed: 7/9/14).
- UN (2012) The Future We Want. Resolution adopted by the General Assembly United Nations, A/RES/66/288, 11 September 2012 <http://daccess-ods.un.org/access.nsf/Get?Open&DS=A/RES/66/288&Lang=E> (accessed: 28/10/12).
- UN Habitat (2014) The City We Need, United Nations Human Settlements Programme (UN-Habitat), file:///Users/oliviabina/Documents/Sources-all/aa%20All/URB-PLG%20sust/UNHABITAT\_14-The%20City%20We%20Need.pdf (accessed: 14/2/14).
- UNCED (1992) Agenda 21, United Nations Conference on Environment and Development, United Nations General Assembly [<http://www.un.org/esa/sustdev/agenda21text.htm> 13/12/02], New York.
- UNDP (2013) China Human Development Report. 2013: Sustainable and Liveable Cities: Toward Ecological Urbanisation, United Nations Development Program, China Translation and Publishing Corporation, Beijing, [http://www.cn.undp.org/content/dam/china/docs/Publications/UNDP-CH\\_2013\\_NHDR\\_EN.pdf](http://www.cn.undp.org/content/dam/china/docs/Publications/UNDP-CH_2013_NHDR_EN.pdf) (accessed: 2/9/13).
- Verdini, G. (2014) The New Urbanisation Plan (2014-2020) and the challenge for the urban governance regime of China. In Paper presented at: International Conference on Urban Futures Squaring Circles, Institute of Social Sciences of the University of Lisbon and Calouste Gulbenkian Foundation 10-11 October 2014.
- Vergragt, P. J. and Quist, J. (2011) Backcasting for sustainability: Introduction to the special issue, *Technological Forecasting and Social Change*, 78, 5, 747-755.
- World Bank and DRC (2014) Urban China. Toward Efficient, Inclusive, and Sustainable Urbanization, The World Bank and the Development Research Center of the State Council, P. R. China, <http://www.worldbank.org/content/dam/Worldbank/document/EAP/China/WEB-Urban-China.pdf> (accessed: 25/3/14).
- Xinhua (2014) Factbox: China's urbanization plan 2014-2020. In Xinhua, 03-17-2014, <http://english.cntv.cn/20140317/104026.shtml> (accessed: 22/3/14).